



# Climate Action Programme for the Chemical Industry (CAPCI) State of the Art, Results and Lessons Learnt

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**giz** Deutsche Gesellschaft  
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Zusammenarbeit (GIZ) GmbH



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According to the IPCC (2022), **industry is the most important emission sector**, when scopes 1 & 2 are considered. Chemical and petrochemical production accounts for 7.4% of global GHG emissions, forming one of the most carbon-intense subsectors.

The chemical sector will receive increasing attention in national climate policies, as **many countries**, including developing and emerging economies, are implementing more ambitious NDC's und **look deeper into emission sources**.

The **chemical industry** is not only **part of the problem** (as a big GHG emitter) but also **part of the solution** as a provider of innovative solutions and materials needed for decarbonisation of other sectors.

## Key Messages

The **Climate Action Programme for the Chemical Industry (CAPCI)**, implemented 2021 to 2024 has provided information, advisory support, action-oriented training and capacity building as well as opportunities for knowledge sharing and awareness creation on the importance of the chemical sector for tackling climate change.

Despite its high share of global greenhouse gas emissions **the chemical sector was often overlooked when it comes to defining climate objectives / Nationally Determined Contributions (NDCs)**, possibly because the bulk of its emissions is related with fossil hydrocarbons and usually appears under the energy sector in national GHG inventories.

After the end of CAPCI project, the established knowhow, trainings, trainer and multiplier networks, cooperation structures with key stakeholder, and roadmaps for mitigation action in the chemical sector offer a **variety of options and starting points for further action and cooperation**.

# 1 The Nexus Chemistry – Climate Change: Why does it matter?



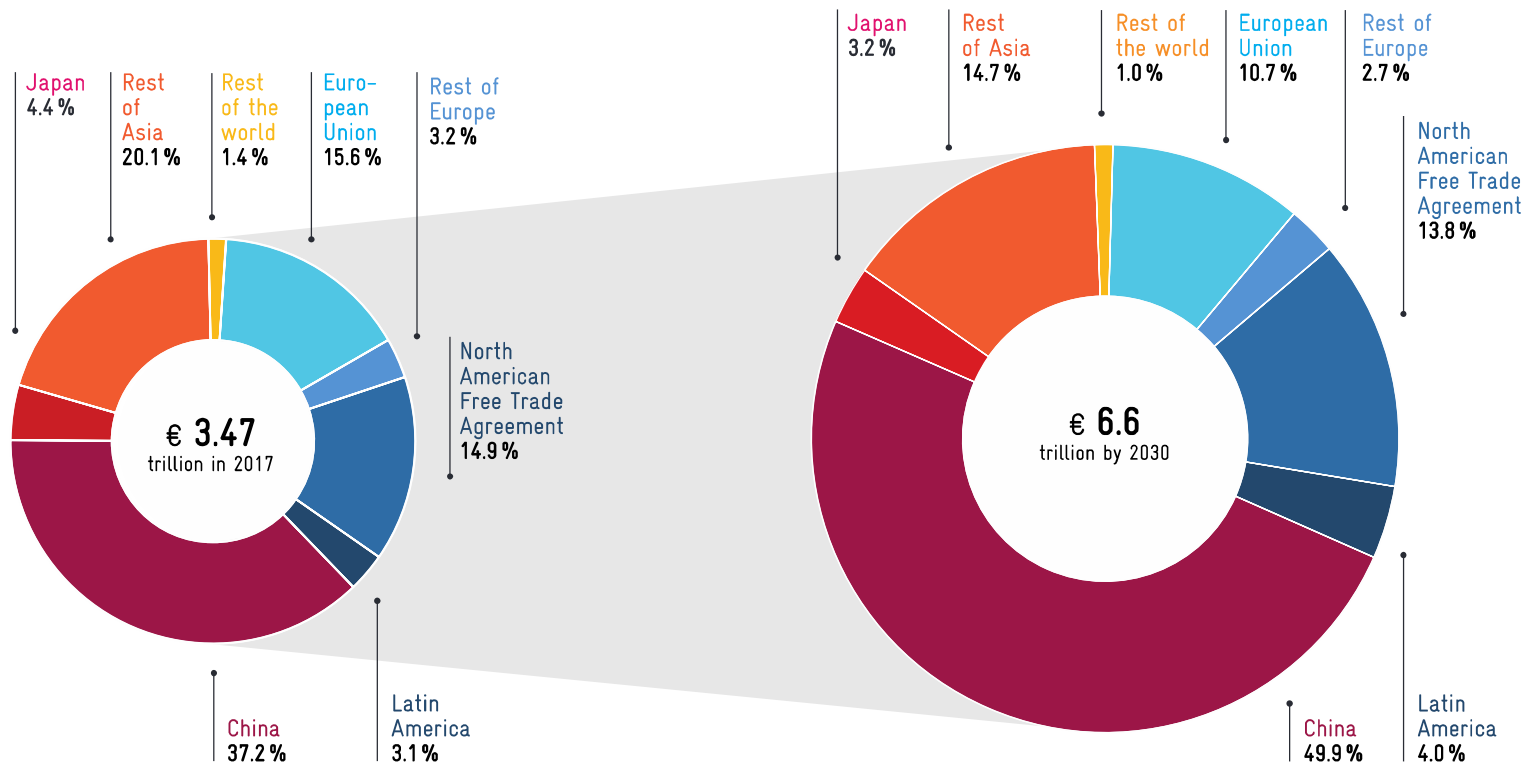
# 1 The Nexus Chemistry – Climate Change: Why does it matter?

- The **chemical industry** has enormous importance for the entire economy and our daily lives. But it also accounts for a significant share of global greenhouse gas emissions.
- More than 90% of all industrial production processes use products of the chemical industry (Source: Ecofys-ICCA, 2017)
- The chemical and petrochemical industry is material-intensive and carbon-intensive. It accounts for roughly **10% of total worldwide final energy demand and 7.4% of global GHG emissions** (Scopes 1 & 2; Source: Industry: IPCC, 2022)
- Under a **Business-as-usual scenario**, the chemical industry keeps on strongly growing. But the GHG emissions of the sector will also rise to ~ 4.5 Gt CO<sub>2eq</sub> by 2030, and more than double as compared to 2005 (~ 2.1 Gt CO<sub>2eq</sub>)
- The **chemical industry** is also a **source of innovation and climate-friendly solutions in other sectors**, e.g. in the area of renewable energy and sustainable mobility

# 1 The Chemical Industry is a big economic player and still growing!

Projected growth of the sales of the chemical industry by 2030 (excluding pharmaceuticals)

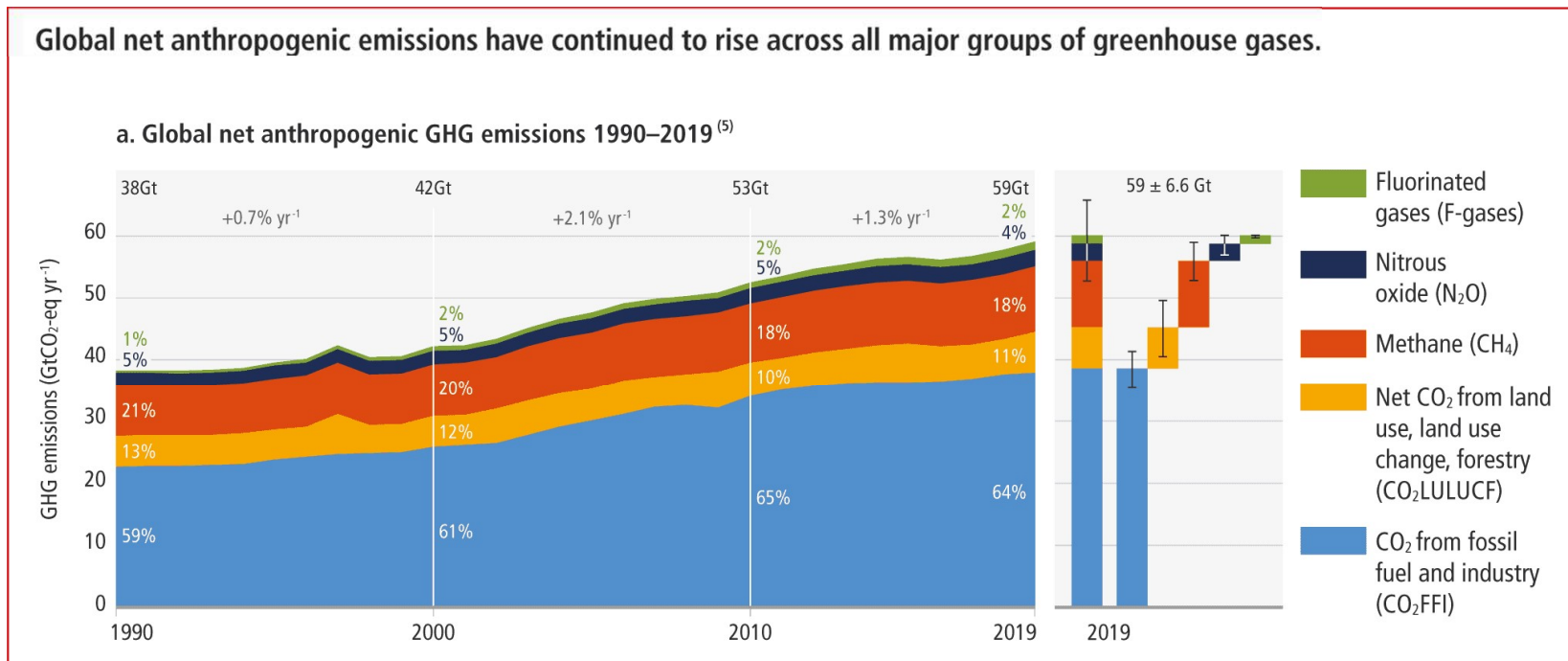
(UNEP 2019 adapted from CEFIC 2018)



# 1 Global greenhouse gas emissions are still increasing

UN IPCC Intergovernmental Panel on Climate Change:

- Global GHG emissions have increased approximately by 50% between 1990 and 2019



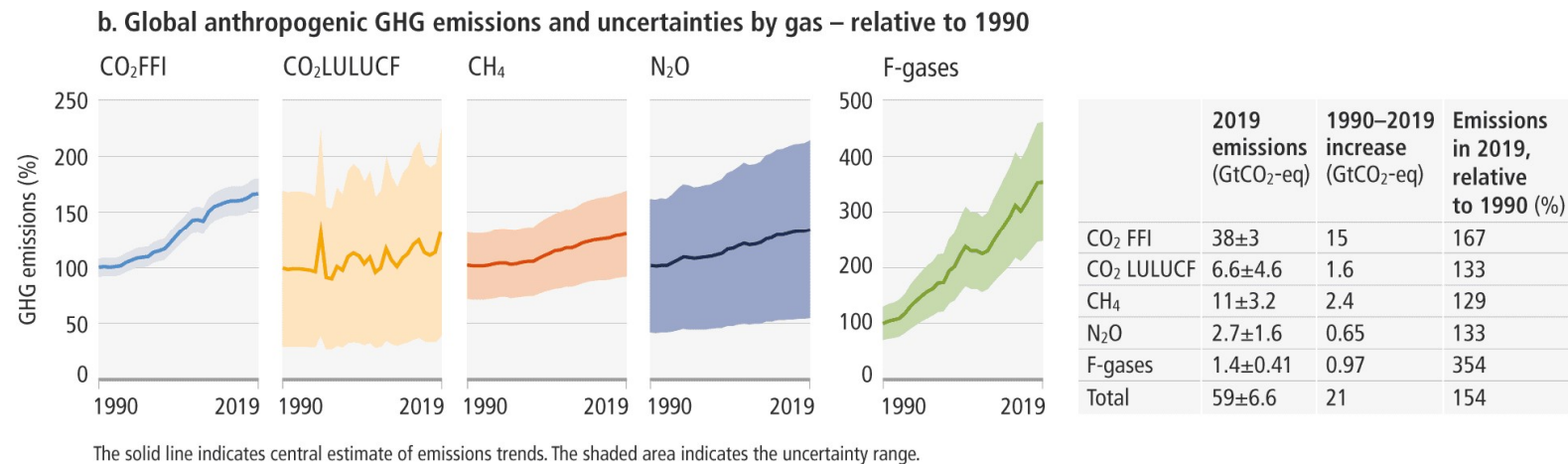
Source: IPCC 2022

# 1 All relevant greenhouse gases have still been growing

UN IPCC Intergovernmental Panel on Climate Change:

- CO<sub>2</sub> from fossil fuel and industry (64%) is the most important GHG, followed by methane (18%)
- F-gases show the steepest increase among GHG

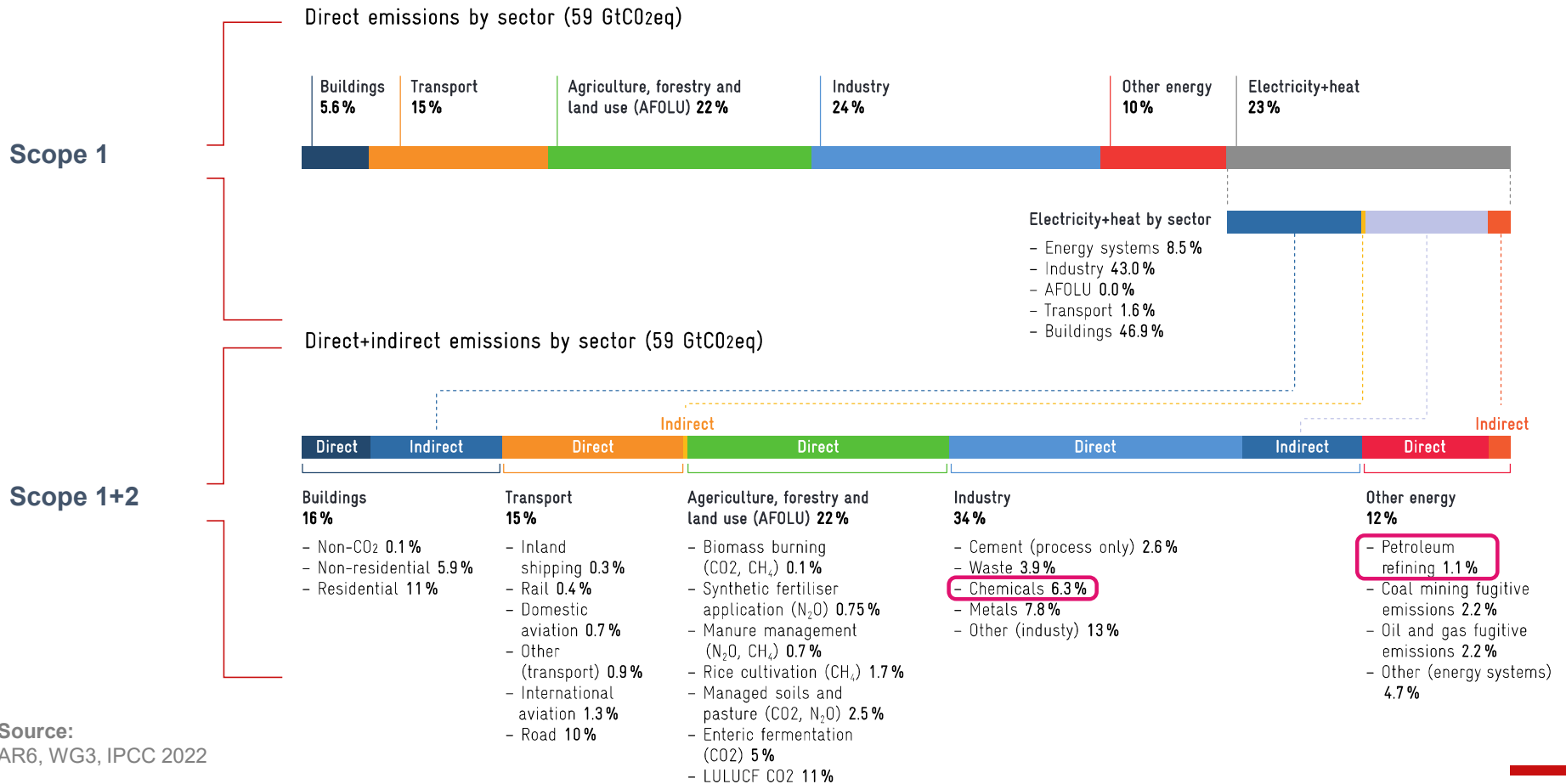
Global net anthropogenic emissions have continued to rise across all major groups of greenhouse gases.



Source: IPCC 2022

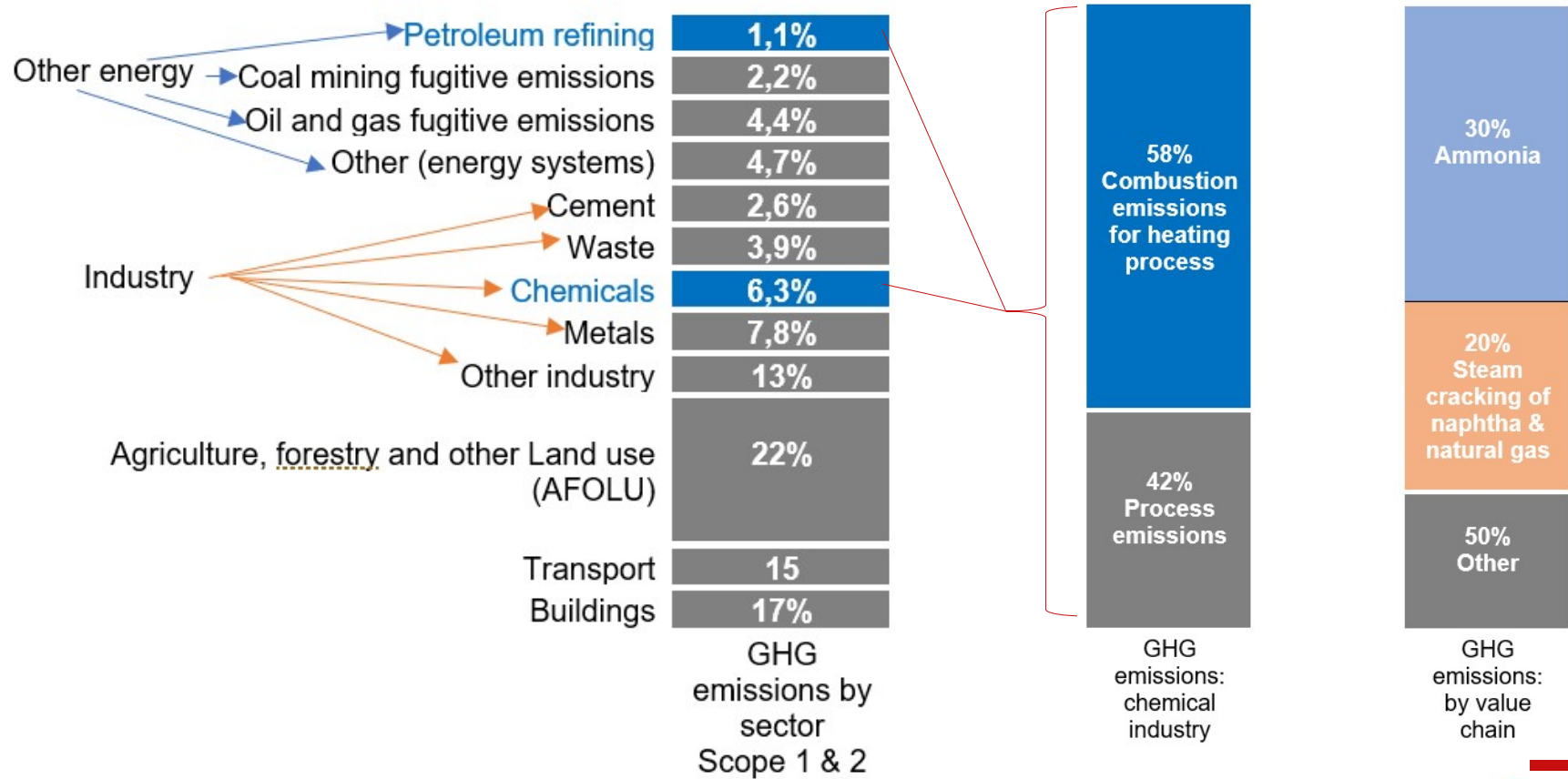


# 1 Direct and Indirect GHG Emissions by Sector (Chemistry: 7.4%)



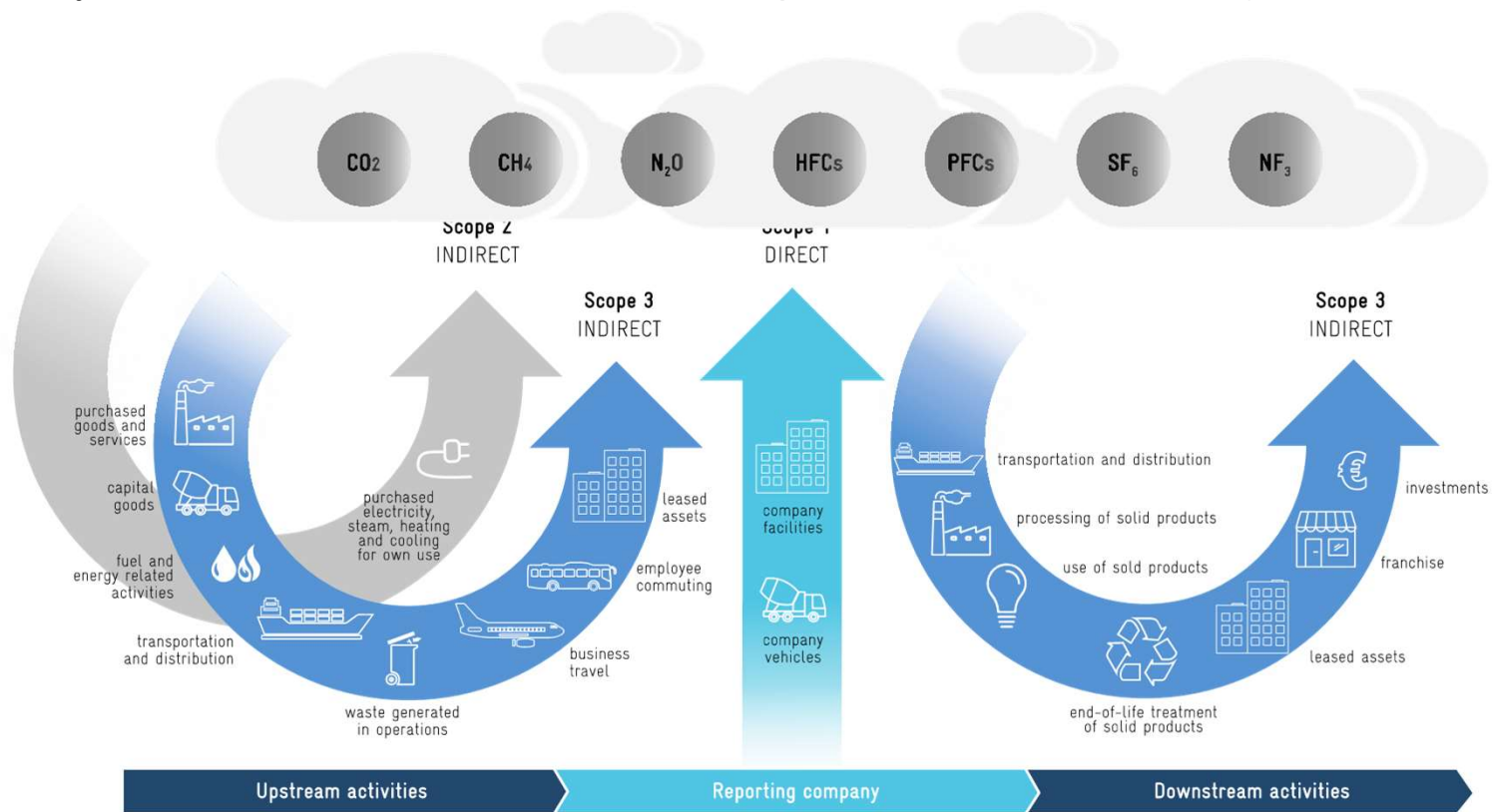
Source:  
AR6, WG3, IPCC 2022

# 1 GHG emissions from chemicals production and petroleum refining (scopes 1+2)



# 1 GHG Protocol Corporate Standard

Overview of the different scopes, sources and types of greenhouse gases (GHG) considered by the **Greenhouse Gas Protocol** for corporate emission accounting



Source:  
<https://ghgprotocol.org>

# 1 Greenhouse gas emissions related with the production & use of chemicals

## Direct emissions

Emissions that are controlled by the reporting company (**Scope 1**), incl.

- fuel combustion-related emissions (CO<sub>2</sub>)
- and process-related emissions, e.g. N<sub>2</sub>O in nitric acid production

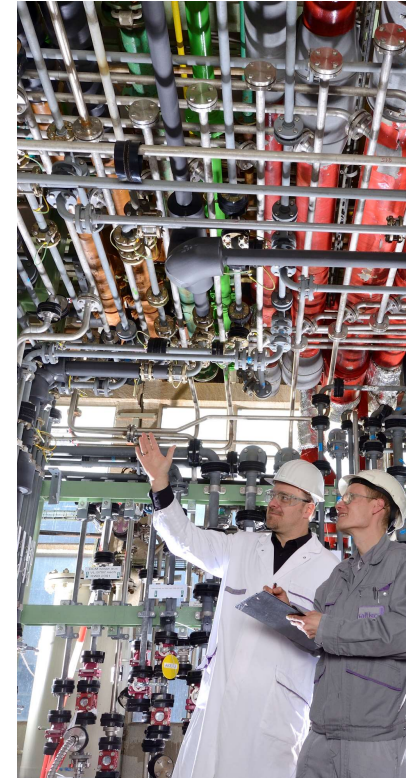
## Indirect emissions

Emissions related with purchased electricity, heat, steam, cooling (**Scope 2**)

All other emissions that occur in the value chain (**Scope 3\***), incl. both,

- Upstream, e.g. as carbon footprint of raw materials, oil and gas extraction etc.
- Downstream, e.g. related with waste produced and the use of chemical products (incl. those with high global warming potential, such as F-gases)

\* Note: Scope 3 emissions are not included in the 7.4% share (IPCC 2022)



## 2 CAPCI at a Glance: The Climate Action Programme for the Chemical Industry



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**Project Idea:** CAPCI provides ... information, knowledge, training and advice for tapping the significant potentials of the chemical industry for climate protection



### Fact & Figures



- BMUV (IKI)



- Global project with focus on **Argentina, Ghana and Thailand, Peru and Vietnam**



- 03/2021 – 02/2024

### Main Partners

- International Council of Chemical Associations (ICCA)
- UN Climate Secretariat – PCCB (Paris Committee on Capacity Building)
- Ministries of Environment
- Associations of the (chemical) industry
- Academia

## 2 CAPCI at a Glance: The Climate Action Programme for the Chemical Industry

### Challenge

Chemical/petrochemical industries account for 10% of world's final energy demand and 7.4% of global GHG emissions (IPPC, 2022)

In 2005, total GHG emissions of the chemical industry amounted to 2,092 million T CO<sub>2eq</sub> and might be more than double to 4,507 million T CO<sub>2eq</sub> by 2030 in a Business-as-Usual Scenario

### Key Elements of CAPCI Approach

**Objective:** Capacity Building on Chemistry and Climate Change

- ✓ Information and awareness creation: Webinars & side events, knowledge base, publications & factsheets, stakeholder dialogues
- ✓ Comprehensive training programmes, ToT in Chemistry and climate change, Short course, country-specific trainings
- ✓ Action-oriented capacity building, advice and knowledge transfer

## 2 CAPCI – Cooperation Structure and Partners

**Funding: Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) through the International Climate Initiative (IKI)**

**Key stakeholders in partner countries: Ministries of industry and of environment** (responsible for climate policies and chemical policies) + **associations of the chemical industry** + relevant stakeholders

Cooperation with Chemical Industry through the **International Council of Chemical Associations (ICCA)**

Cooperation with the secretariat of the **United Nations Framework Convention on Climate Change (UNFCCC)** through its Paris Committee on Capacity Building (PCCB)

Close association with the **International Sustainable Chemistry Collaborative Centre (ISC<sub>3</sub>)** and GIZ's implementing partners **DECHEMA** und **Leuphana University**

Close cooperation with other relevant GIZ projects, in particular:

- **PtX Hub**  
(Green Hydrogen and other Power-to-X options)
- **Proklima**  
(Cluster of projects working on climate-and ozone friendly alternatives for fluorinated gases)
- **NACAG**  
(Nitric Acid Climate Action Group)



On behalf of:



of the Federal Republic of Germany



## 2 CAPCI – Project Approach

### Phase 1

Information, awareness creation and stakeholder dialogue; national stakeholder dialogues

### Phase 2

Capacity building & training with a focus on **climate action**

### Project Outcome

The capacities of key actors from the private and public sector in selected developing countries and emerging economies for designing and implementing effective measures for climate protection in the chemical sector are enhanced.

### Output I

Knowledge, information and best practices on greenhouse gas mitigation in the production and use of chemicals are shared among relevant stakeholders from developing countries and emerging economies

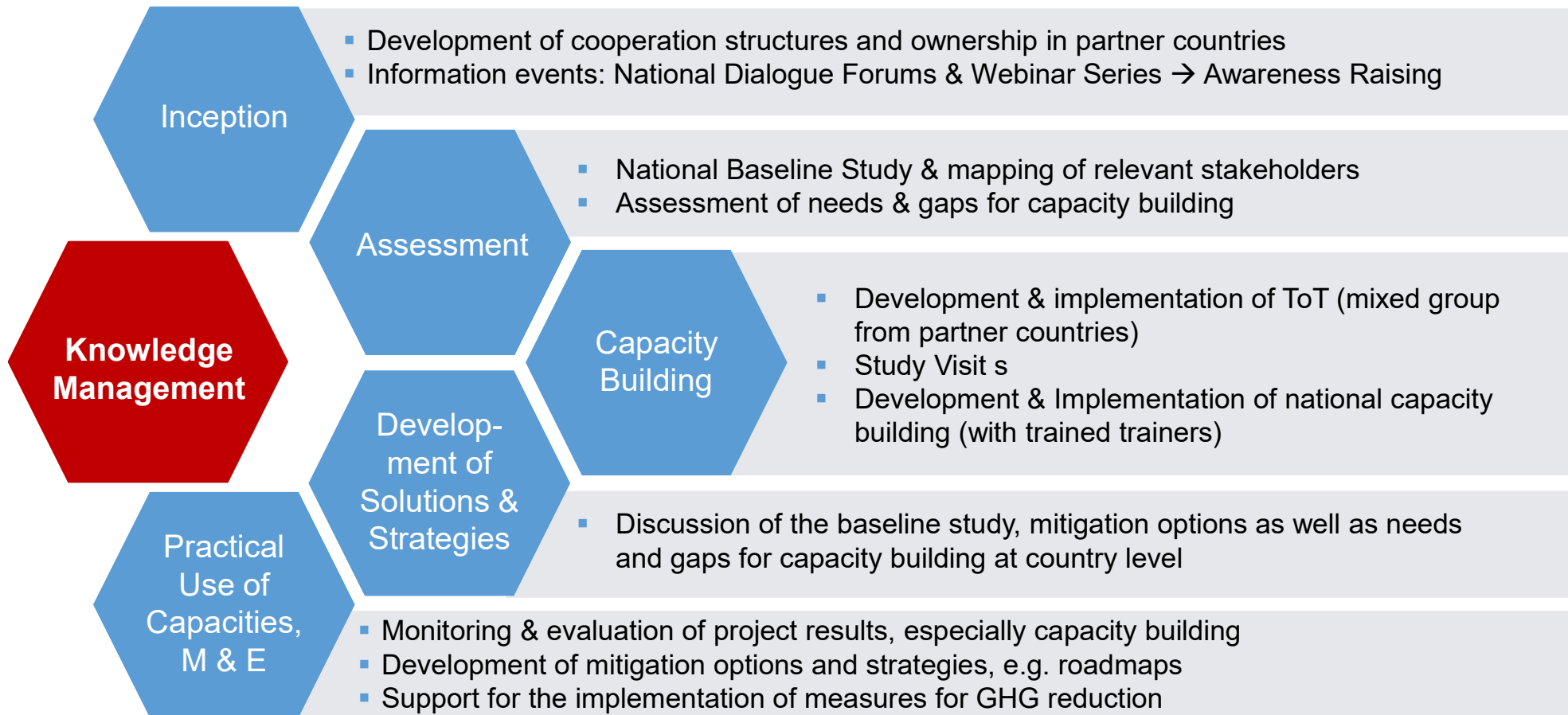
### Output II

Decision-makers and professionals from public and private sector institutions have application-oriented knowledge on climate mitigation options in the production and use of chemicals

### Output III

Companies in selected developing countries or emerging economies have initiated implementation of measures for GHG mitigation in the production and use of chemicals

## 2 CAPCI – Strategy



## 2 Outcome: Overview

**The capacities of key actors from the private and public sector in selected developing countries and emerging economies for designing and implementing effective measures for climate protection in the production and use of chemicals are enhanced.**

**Indicators:** (how we measure our results and project success)

- Climate action plans and / or concepts (e.g. roadmaps) in partner countries
- Training programmes institutionally anchored in partner institutions

**Achievement of the outcome and its indicators:**

**Green**  
(According to overall self assessment of CAPCI and the indicators)



### Details:

Good Response / high interest regarding topic (nexus chemistry & climate change), ownership of partner institutions

**3 Roadmaps** are being developed (the one in Argentina has already been discussed with stakeholders)

Overarching **trainings** are developed and **capacity building** is implemented in partner countries

### 3 Output I: Knowledge, Information and Best Practices



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**Knowledge, information and best practices on greenhouse gas mitigation in the production and use of chemicals are shared among relevant stakeholders from developing countries and emerging economies**

#### Indicators:

- Knowledge Base established / Number of Site visits (1500) **Yellow**
- Events for dissemination of best practices for GHG mitigation (12 by end of project) **Green**



#### Details (March 2024):

**Knowledge base** is online with > 50 best practices showing practical solutions for climate-friendly technologies and approaches in the production and use of chemicals.

(> 800 site visits in 02/2024 – delay of several months)

**12 international webinars, 16 stakeholder dialogues, 4 side events** at international conferences: Good response in partner countries and internationally (participation in webinars and stakeholder dialogues etc.):

- High demand for information and awareness creation in partner countries
- CAPCI results and lessons learnt have been published together with factsheets among others

### 3 Output I: International Webinar Series

In 2021 and 2022 CAPCI in cooperation with the ICCA (International Council of Chemical Associations), carried out a **webinar series** with 7 sessions in total on different aspects of the **nexus Chemistry & Climate Change**, 5 more webinars followed in 2023 and 2024:

- 951 participants from 38 countries
- 42% of the participants were from the private sector
- 38% of the participants were woman



#### Main focus:

Different perspectives and aspects of the nexus topic **sustainable chemistry for climate protection** in order to raise awareness of the importance of the chemical sector for climate protection



#### The 2<sup>nd</sup> Webinar Series at a Glance:

- > **Session 1: Circular Economy as a Guiding Principle for the Chemical Industry** - The example of the plastics lifecycle: Reducing climate and environmental impacts while improving resource efficiency  
**29.06.2022 (13:30 – 15:00 German Time)**
- > **Session 2: Exploring Potentials of Innovative Power-to-X Technologies** - The chemical industry as a key player also for the defossilization in other industrial sectors through "Sector Coupling"  
**28.09.2022 (13:30 – 15:00 Berlin Time) (tbc)**
- > **Session 3: Chemical parks "Verbund"-structure** – Climate Benefits through Joint Action in Chemical Parks – Opportunities for energy and resource efficiency through connected energy generation and production networks  
**23.11.2022 (13:30 – 15:00 Berlin Time) (tbc)**

It is planned to continue the webinar series with further relevant topics on sustainable chemistry in 2023.

### 3 Output I: Knowledge Management Database

#### Focus: Best Practices / Best Available Technologies on GHG-Mitigation in the Production and Use of Chemicals

- Contents: > 50 best practices available
- Published on the CAPCI microsite [isc3.org/page/capci](https://isc3.org/page/capci)
- Orientation in the product lifecycle
- The knowledge base could eventually be extended to cover additional areas of sustainable chemistry.



Intropage

### 3 Output I: Publications and Factsheets

- **CAPCI Publication** with first results and learning experiences
- **CAPCI – Article** in the Journal of Business Chemistry:  
*The chemical industry as a key player for climate protection: Learning experiences from cooperation with developing countries and emerging economies | Business Chemistry (June 2023)*
- **Dialogue paper** on chemistry and climate change in developing countries and emerging economies
- **8 Factsheets** (latest releases on “green ammonia”, “carbon capture and utilization (CCU)”, “green methanol”, roadmaps for the chemical industry and CAPCI's lessons learnt



For more information:

<https://www.isc3.org/page/capci>





### 3 Output I: Stakeholder Dialogues in Partner Countries: Putting „Chemistry and Climate Change“ on the Agenda

- **16 Stakeholder dialogues on Chemistry and Climate Change** were realized by CAPCI in cooperation with ministries of environment and/or industry as well as chemical associations in five partner countries:  
Argentina | Ghana | Peru | Thailand | Vietnam
- The stakeholder dialogues helped to **raise awareness** on the nexus sustainable chemistry & climate protection and **identify country-specific options and priorities for action**
- **>> 1000 participants** took part in the discussions of the nexus sustainable chemistry & climate protection on national level:
  - 40% of the participants were women
  - 58% came from the private sector



## 4 Output I: Training and Capacity Building

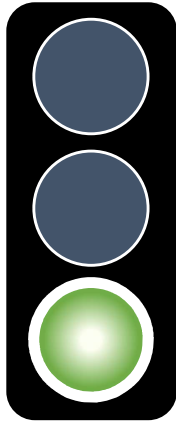


## 4 Output II: Training and Capacity Building

**Decision-makers and professionals from public and private sector institutions (multipliers) have application-oriented knowledge on climate mitigation options in the production and use of chemicals**

### Indicators:

- Comprehensive training programme / Number of trainings realized (6)
- Partner organisations the actively support training execution (3)



### Details (March 2024):

#### Realized:

1 Successful ToT, 1 self-paced training (Atingi), 2 study visits and 9 trainings in CAPCI partner countries (based on ToT but adapted to country-specific needs and demands)

Network of trainers and multipliers in partner countries + broad set of training materials

2 trainings in Argentina

4 trainings in Ghana

2 trainings in Thailand

1 partner-driven online training in Peru

## 4 Output II: Training of Trainers

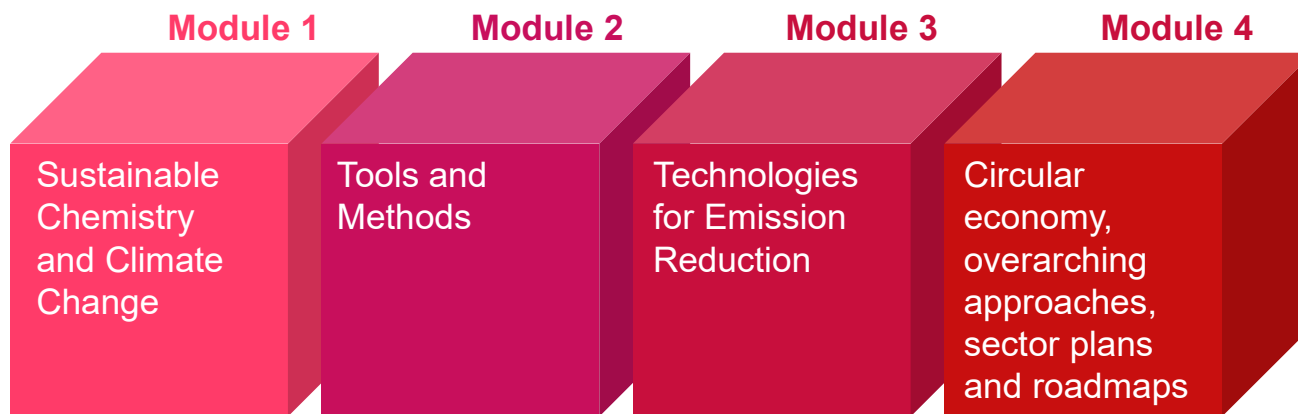
CAPCI in cooperation with the consulting company HEAT and the support of ICCA has developed a **Training of Trainers (ToT) course on Sustainable Chemistry and Climate Change**, using a moodle-based platform of the GIZ called **Atingi** (online-training):

- The ToT comprises 6 modules
- 30 professionals completed it successfully
- Participants from 5 countries: Argentina, Ghana, Peru Thailand and Vietnam
- From government, private sector, academia and consulting companies
- The ToT participants and the course materials form the basis for country-specific training programmes and a self-paced training course



## 4 Output II: Self-paced Training Course

Self-paced training course „Sustainable Chemistry and Climate Change“ with 4 modules:



CAPCI invites you to join this course with the link:

[Sustainable Chemistry and Climate Change \(atingi.org\)](https://www.atingi.org)

## 4 Output II: Study Visit 2022

CAPCI has realized a **first Study Tour to Germany** from 21 – 27 August 2022

The study visit focused on practical aspects of climate protection and circular economy in the production and use of chemicals, while promoting knowledge sharing, exchange and networking among the participants:

- 20 Participants from Government, Private Sector and Academia
- from 5 countries: **Argentina, Peru, Ghana, Thailand and Vietnam**



**Day 1**  
Introductory Workshop

**Day 2**  
Visit at Industry Park Höchst  
Visit at BASF



**Day 3**  
Achema

**Day 4**  
Visit at COVESTRO  
Visit at CURRENTA

**Day 5**  
Final Workshop

## 4 Output II: Study Visit 2023

CAPCI has realized a **second Study Tour to Germany** from 9 – 14 July 2023

Participants:

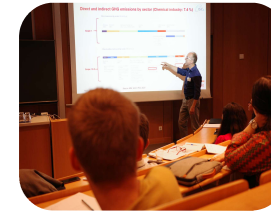
- 12 Participants from Government and Private Sector
- from 3 partner countries:  
**Argentina, Ghana** and **Thailand**

The study visit focused on:

- South-South exchange, inter alia in ISC3-Leuphana summer school on Sustainable Chemistry (focus 2023: climate crisis)
- Multiplier effect of the participants which extended CAPCI's network
- Knowledge transfer, inspiration, concrete action-relevant ideas



**Day 1**  
Workshop



**Day 4**  
Sommer School  
Leuphana University  
Part 2



**Day 2**  
Sommer  
School  
Leuphana  
University  
Part 1



**Day 5**  
Workshop  
Visit at Adlershof Science  
Industry Park



**Day 3**  
Sommer School  
Leuphana  
University  
Part 1



**Day 6**  
Visit at the  
Chemical industry  
park Bitterfeld

## 5 Output III: Support for Climate Action in the Chemical Industry



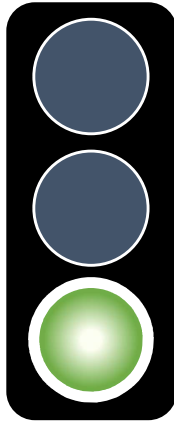


## 5 Output III: Support for Climate Action in the Chemical Industry

**Companies in selected developing countries or emerging economies have initiated the development of measures for GHG mitigation in the production and use of chemicals**

### Indicators:

- Number of commitments (for GHG mitigation) adopted by key stakeholders (4) **Green**
- Companies have started GHG mitigation projects (10) **Green**



### Details (March 2024):

In CAPCI's 3 focus countries, the trainings were realized in a practice-oriented way and combined with advice and support for developing **action plans and mitigation measures in companies**

**Roadmap Development** = important basis for commitment to further action (together with the follow-up of Stakeholder dialogues) – as far as possible linked with national climate policies / NDCs!

Action-oriented capacity is conceptually linked with **action plans** and the **initiation of mitigation measures in around 20 companies**

## 6 Activities in partner countries



## 6 Activities in partner countries

In a **first phase** (2021 – mid 2022) at the beginning of the CAPCI project, 5 partner countries were supported in developing baseline studies for the chemical sector and organizing stakeholder dialogues to discuss the existing situation of the sector and the climate-related challenges (under Output O.1) in cooperation with key organisations from the public and the private sector:

Argentina | Ghana | Peru | Thailand | Vietnam



These 5 countries were also involved in networking activities, the training of trainers course and a first study visit to Germany in 2022

In the **second phase** (mid 2022 – early 2024), CAPCI concentrated its support on three focus countries: **Argentina**, **Ghana** and **Thailand** (see next slides), while **Peru** and **Vietnam**, partially followed up on their own e.g. in national training measures (Peru) or continued networking.

Prioritary areas of the cooperation with focus countries:

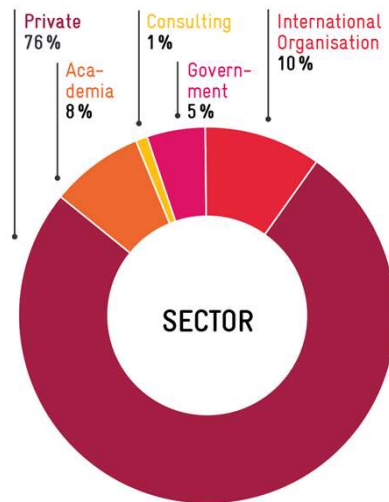
- Country-specific trainings on chemistry and climate change with around 450 participants in total, mainly from chemical companies
- Roadmaps for climate protection in the production and use of chemicals / stakeholder dialogues
- Support for companies wanting to initiate climate-, energy- or environment-related improvement measures

## 6 Argentina

**Partner:** Chemical Association (CIQYP), Ministry of the Environment, Ministry of Economy

### CAPCI-Activities:

- Stakeholder dialogues + baseline study
- Trainings in Spanish in cooperation with the chemical industry and the Ministry of Industry (basic and advanced)
- Supporting a roadmap for GHG mitigation in the chemical industry (CIQyP has created a proper working group on energy and climate!)
  - Roadmap discussion with stakeholders (bottom)
  - 3 areas of intervention: energy, circular economy and materials, policy framework
  - 3 scenarios of growing complexity with time



## 6 Argentina: Outline of a roadmap for the chemical industry

Most relevant measures that are part of the Roadmap for the chemical industry in Argentina

Scenario	Energy	Circular economy and raw materials	Policy framework
<b>Low complexity</b> (impact to 2030)	<ul style="list-style-type: none"> <li>Energy efficiency</li> <li>Renewable energies</li> </ul>	<ul style="list-style-type: none"> <li>Mechanical and chemical recycling</li> <li>Resource efficiency strategies</li> <li>Reduction of emissions in specific sectors</li> </ul>	<ul style="list-style-type: none"> <li>Adequacy of promotion instruments</li> <li>Political-institutional support for transformation</li> </ul>
<b>Medium complexity</b> (impact to 2040)	<ul style="list-style-type: none"> <li>Blue Hydrogen</li> <li>Use of biomass</li> </ul>	<ul style="list-style-type: none"> <li>Use of biomass</li> </ul>	<ul style="list-style-type: none"> <li>Innovation tools</li> <li>Infrastructure for CCU</li> <li>Public/Private R+D Partnerships</li> </ul>
<b>High complexity</b> (impact to 2050)	<ul style="list-style-type: none"> <li>Green Hydrogen</li> </ul>	<ul style="list-style-type: none"> <li>CCU</li> </ul>	<ul style="list-style-type: none"> <li>Emission rights</li> <li>Regulated carbon market</li> </ul>

Source: CRBAS  
Centro Regional Basilea  
para América del Sur

## 6 Ghana

**Partner: EPA – Environmental Protection Agency** Environmental Protection Agency + various stakeholders from the public, private and civil society sectors, including AGI, universities



### Starting situation:

- Production of chemicals is limited to defined segments; most chemicals are imported.
- Challenges: Energy (high prices, high climate relevance), use of chemicals, new and innovative of chemical production

### CAPCI-Activities:

- Stakeholder dialogues + baseline study
- PtX-Training and workshop in March 2023
- Training and consulting package for chemical companies with a focus on energy and resource efficiency
- Roadmap Study: Linking Climate Protection and Chemicals Management
- Training on sustainable industrial areas and chemical clusters



## 6 Thailand

**Partner:** Ministry of Industry (DIW), Ministry of the Environment, Industrial Association FTI and others



### Starting situation:

- Strong and differentiated chemical sector
- Thailand committed to be carbon neutral by 2050 in 2021

### CAPCI-Activities:

- Stakeholder dialogues and baseline study
- Trainings were designed particularly for small and medium-sized enterprises
- 140 participants in total took part in the trainings that included GHG assessment and mitigation actions etc.
- Trainings were supported by the public sector and the private sector through the FTI and its Responsible Care programme
- The Roadmap on a GHG reduction pathway for the chemical industry has been developed as a contribution to achieving the national climate targets



## 7 CAPCI's lessons learnt, conclusions and reflections on follow-up





## 7 CAPCI's lessons learnt, conclusions and reflections



Despite its high share of global greenhouse gas emissions, the chemical sector was so far often not considered in defining climate objectives / Nationally Determined Contributions (NDCs) and corresponding implementation strategies at least in developing countries and emerging economies

One of the reasons seems to be lacking awareness, because the bulk of the chemical industry's GHG emissions is related with fossil hydrocarbons and appears under the energy sector in national GHG inventories.

This situation is about to change, as many countries, including developing and emerging economies, have defined more ambitious NDC's and sometimes committed to climate neutrality by mid of the century. This requires a more careful look at emission sources.

On global level, industry is the most important GHG emitter (IPCC 2022), if not only direct but also indirect emissions are counted. Chemical and petrochemical production is among the 3 main emission sources within the industry sector.

A growing share of chemical production and use takes place in developing countries and emerging economies. In addition to financing mechanisms, these countries have enormous needs for information, reliable data, awareness creation and demand-oriented capacity development, regarding the nexus chemistry and climate protection as well as the linkages between sustainable chemicals management and climate protection.

## 7 Cooperation structures and stakeholder involvement

CAPCI benefitted a lot from **cooperation with relevant GIZ projects**, e.g. ISC3, NACAG, PtX Hub, PROKLIMA

The **UNFCCC secretariat** and the **ICCA** proved to be very helpful international partners for the execution of this global project. ICCA opened many doors and was almost indispensable in establishing cooperation structures and ties with chemical associations in the starting phase (partially building on structures of the „Responsible Care“ programme)

**South-South cooperation** and joint learning processes proved to be a value added of this global cooperation project

**In the partner countries**, CAPCI had different driving forces / lead stakeholders, partially with the public sector more in the lead and partially with the private sector with stronger ownership. The establishment of constructive public-private cooperations was key.

Despite Corona restrictions, CAPCI - with local support of partner institutions and GIZ staff - succeeded in all of its focus countries to build **effective stakeholder dialogue with involvement of government institutions** (Ministries for Environment and Industry), **private sector** (associations of the (chemical) industry) and academia / civil society

**Stakeholder dialogue is clearly an important success factor together with the active involvement of the local partners** for bringing the nexus sustainable chemistry and climate protection on the agenda.



**Potential Follow-up:** Existing cooperation structures and expert networks in the partner countries are worth to be supported further and could be used for follow-up activities!

## 7 Basis for climate action (a): Capacity building

- Action-oriented capacity building is at the core of CAPCI's conceptual approach
- The training of trainers (ToT) realized with the help of the Atingi platform in 2022 was the basis for further trainings:
  - Network of around 30 trained trainers from 5 countries => trainers had an active role in specific trainings in 4 countries (3 focus countries + Peru)
  - Broad set of training materials and background literature on chemistry and climate change => served to create a self-paced training course „Sustainable Chemistry and Climate Change“ on Atingi
- Though building on the ToT, the trainings in the focus countries were largely different from each other, in terms of concept, target groups and language, thereby responding to country-specific requirements and demands.
- There is no blueprint: Training programmes must be designed individually according to the specific situation in the country and of the industrial sector (using and eventually adapting the existing materials)



### **Potential follow-up: E.g.:**

Support further trainings in partner countries, complement the existing training materials or integrate them in other capacity building programmes, complement the self-paced Atingi course with materials on sustainable chemicals management!

## 7 Basis for climate action (b): The role of roadmaps

- From data and baseline studies to scenarios
- From scenarios to realistic action plans and roadmaps for GHG mitigation in the chemical sector:
  - They should address economic, social and environmental aspects, in order to avoid trade-offs
  - and should be based on multi-stakeholder cooperation in order to find acceptance and serve as a contribution to national climate objectives / NDCs / sector plans
- There is no „blueprint“ or „one size fits all“; but learning from each other is extremely helpful and inspiring
- South-South exchange is extremely helpful: Global projects with activities in several countries can help to organize it in order to advance new topics (such as the nexus chemistry – climate change)

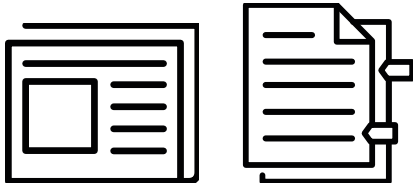


### Potential Follow-up:

The developed roadmap proposals could serve as ideas for the design of bilateral mitigation projects and be submitted to potential donors or funding lines

Further technical and/or financial support for the involved stakeholders in Argentina, Ghana and Thailand would be welcome and extremely helpful even at smaller scale

## 7 Tools, formats and networks: Options for a possible follow-up



CAPCI has compiled and elaborated knowledge and literature on the nexus chemistry and climate change, e.g. in form of factsheets, publications and a knowledge base:

[www.isc3.org/page/capci](http://www.isc3.org/page/capci)

- The **knowledge base** could be updated and thematically complemented by sustainable chemicals management
- The **training materials** could be updated and thematically complemented by sustainable chemicals management
- Formats such as the **international webinars** and the **stakeholder dialogues** in partner countries might be continued
- The **international network of trainers and experts** established by CAPCI could be maintained and used by relevant projects for related topics and activities
- The **stakeholder cooperations and expert networks in partner countries** could be used for country activities for follow-up and related activities

## 7 12 Recommendations on Chemistry and Climate Change (1)

See: CAPCI Dialogue paper ([www.isc3.org/page/capci](http://www.isc3.org/page/capci))

1. **Include** the chemical sector explicitly in sector plans and strategies for implementing Nationally Determined Contributions (NDCs) and make sure that political commitments are matched by coherent strategies and means of implementation.
2. **Develop** roadmaps for the chemical industries as a helpful stepwise approach towards realistic mitigation pathways and the identification of benefits and synergies, including contributions to national climate policies. Roadmaps should be based on the concepts of circular economy and the product lifecycle; their design must respond to the specific situation and needs of the respective industries.
3. **Avoid** trade-offs between chemicals management and climate protection, whereas synergies should be identified and used systematically at the policy level and in production processes.
4. **Support** the establishment of policy and regulatory frameworks that enable the sector's transformation towards sustainable chemistry and GHG mitigation, including inter alia functioning cooperation mechanisms between different ministries and between different levels of administration (national – regional – local).

## 7 12 Recommendations on Chemistry and Climate Change (2)

5. **Encourage** cooperation between governmental and private sector stakeholders ideally with the involvement of academia and civil society. Broad dialogue and societal support are essential for a successful transformation towards a climate-friendly and sustainable chemical sector.
6. **Provide** financial and economic incentives for encouraging mitigation efforts and private sector investments into new climate-friendly technologies, incl. the use of mechanisms according to Art. 6 of the Paris Agreement, for developing such roadmaps and implementing successful measures for GHG mitigation in the chemical sector.
7. **Realize** training and capacity building programmes, in order to qualify the relevant target groups, including professionals, managers as well as technicians, in all areas needed for designing and implementing effective climate action while promoting interdisciplinarity and taking care of sustainable management of resources, chemicals and waste.
8. **Address** using international cooperation and knowledge-sharing networks and facilitate specific South-South exchange, as mitigation in the chemical industry is still new for many developing countries and emerging economies.

## 7 12 Recommendations on Chemistry and Climate Change (3)

9. **Explore** the broad range of available mitigation options and innovative technologies, particularly the big potentials for cost-effective mitigation in developing countries and emerging economies through loss reduction, energy and resource efficiency.
10. **Promote** the use of significant synergies between plants and companies, e.g. through circular economy and renewable energy solutions, particularly in well-organised industrial areas and chemical parks (“*Verbundstandorte*”) that can also serve as a laboratory for developing innovative technologies, including green hydrogen or Power-to-Chemicals (PtC).
11. **Organise** technical support for small and medium-sized companies, including access to information, knowledge sharing, advice, capacity building and finance.
12. **Use** existing structures and networks related with the production and use of chemicals, such as for instance the well-established Responsible Care Programme of the chemical industry as well as public-private initiatives that could be used for amplifying climate-related issues in the chemical sector.



## 7 The Way forward

- CAPCI was implemented from 2021 – 2024 with funding from the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) in the framework of the International Climate Initiative (IKI) in close association with the International Sustainable Chemistry Collaborative Centre (ISC3).
- The ISC3 will follow-up and work on the nexus between Sustainable Chemistry and Climate Protection.
- The publications, knowledge and tools developed by CAPCI are hosted by the ISC3, and published materials and tools are found under the subsite „climate action“) in the ISC3 Homepage: [www.isc3.org/page/capci](http://www.isc3.org/page/capci).
- As claimed by the United Nations (see report „Making Peace with Nature“ and the „Global Framework on Chemicals“ holistic approaches are needed for tackling the triple crisis of climate change, biodiversity loss and pollution and the respective interlinkages. CAPCI experiences clearly indicate that the synergies and trade-offs between sustainable chemicals management and climate protection need to be addressed urgently.
- In CAPCI partner countries, awareness, capacities and public-private dialogue have been strengthened, and in addition strategies for a climate-friendly and sustainable development of the chemical sector have been developed in the form of roadmaps.
- Thereby the basis has been created for including the chemical sector explicitly into the national climate policies and objectives of developing countries and emerging economies, as defined in their respective NDCs, and for concrete climate action.



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