Research Centre
for Gas Innovation

Paths for Sustainable Development

2015-2020

USP FAPESP

What's inside

Message from the Director

Professor Dr. Julio R Meneghini
Executive & Scientific Director

These first five years of the RCGI have been challenging and rewarding. They were challenging as they required focus to orchestrate the different projects and innovation aspects. We have been developing technologies that will help the oil & gas sector and industry, in general, to become better equipped to reduce greenhouse gas emissions as they transition to low carbon and renewable energy sources. These technologies enable economic growth for Brazil at the same time as they could become sustainable solutions for other countries as well.

Within a fruitful triple helix relationship, established among the university, the industry, and the government agency working together, striving with society and the environment in mind, we were able to apply all our efforts to produce innovation towards sustainability. We are becoming more and more alert to understanding the impact of our actions on the planet and on the people. Alongside technical developments, we also seek to broaden the views of government and decision-making agents, company leaders, media and society to balance technically, economically, environmentally and socially integrated solutions. It is imperative that a new vision brings a better future for us, for the coming generations and for all ecosystems. We are confident we can strive towards this all together.

In the path towards development, this report shows our history in the last five years, our identity and some examples of the successful work carried out to add value to the Sustainable Development Goals achievement. From the beginning, with a small group of researchers interested in aligning the research towards global and broad actions, we have shared our passion by increasing education and outreach to internal and external populations to build a sustainability mindset.

And finally, this journey has been rewarding because of an extraordinary multidisciplinary qualified and committed team of people, with researchers, technicians, administrative personnel and partners from the sponsor company and the funding agency, that working all together achieved remarkable results.

I thank each one of you for your dedication and efforts, and invite everyone to continue building a sustainable path of contributions towards the Agenda 2030 targets.

Best wishes,

The Centre

Cleaner energy for a sustainable future!

The RCGI – Research Centre for Gas Innovation appears as a world centre for advanced studies on energy transition for the sustainable use of natural gas, biogas, hydrogen and management, transport, storage and usage of CO_2. The Centre, based at the University of São Paulo, is the result of FAPESP and Shell partnerships in support to high-level scientific research for the development of the energy sector. Its activities are based on three pillars: research, innovation and dissemination of knowledge. The RCGI brings together a team of researchers from various fields of science and technology for the development of the gas and energy industries.

The projects are structured into five research programmes: Engineering, Physical-Chemistry, Energy Policies & Economics, CO_2 Abatement and Geophysics. With the integration of researchers and the complementarity of their programmes, the RCGI offers innovative solutions to the technological problems with energy transition related to natural gas, biogas, hydrogen and CO_2 emissions as well as providing support for the improvement of energy policies in the state of São Paulo, in Brazil and worldwide. In particular, it intends to increase the competitiveness of the industry of São Paulo and inform society of the enormous economic potential in the use of natural gas, biogas and hydrogen as sources of energy in the years to come.

The RCGI is grateful to the generous support by the founder sponsors: São Paulo Research Foundation (FAPESP), Shell and National Agency of Petroleum, Natural Gas and Biofuels (ANP).

An international centre in a global city: São Paulo

(Photo: Marcos Santos/USP Imagens)

São Paulo

the host city

The city of São Paulo is located in the Southeast region of Brazil and is the capital of the state of São Paulo. The city is one of the largest in the world, with more than 12 million inhabitants and has a gross domestic product (GDP) of almost R$ 700 billion, corresponding to 10.6% of the Brazilian GDP. More than a city, São Paulo is the largest Brazilian financial, cultural, and scientific centre.

Key Facts[1]

State of São Paulo

Population: 46,289,333
Area: 248,219 km²
Human Development Index: 0.783
Public Universities: University of São Paulo (USP), University of Campinas (UNICAMP), Federal University of São Paulo (UNIFESP), São Paulo State University (UNESP), Federal Institute of São Paulo (IFSP).
State commission 2030 Agenda: Decree 63792 (2018/Nov)

São Paulo City

Population: 12,252,023
Area: 1,521 km²
Human Development Index: 0.805
Regulation of the 2030 Agenda: Law 16817 (2018/Feb)

America, Brazil

State of São Paulo

São Paulo City

Centre location

Centre of excellence at the best Latin American University: University of São Paulo (USP)

Photo: Cecília Bastos (USP Imagens)

University of São Paulo
Brazil

Information[2] - 2019

Established in **1934**
11 Campi (main campus – São Paulo city)
42 Institutes and Colleges
48 Libraries
340 Undergraduate courses
264 Postgraduate courses
97,325 Students
R$5.98 billion Annual Budget

Results

First ranked in Brazil on RUF - Ranking Universitário Folha 2019
First ranked in Ibero-America on AWRU - Academic Ranking of World Universities 2020 (101-150)
First ranked in Latin America on THE - Times Higher Education 2021 (201-250)
It accounts for **54% of the Brazilian papers** in the Web of Science

USP in Numbers


Research Centre
for Gas Innovation
FAPESP

Research Centre for Gas Innovation

cleaner energy for a sustainable future

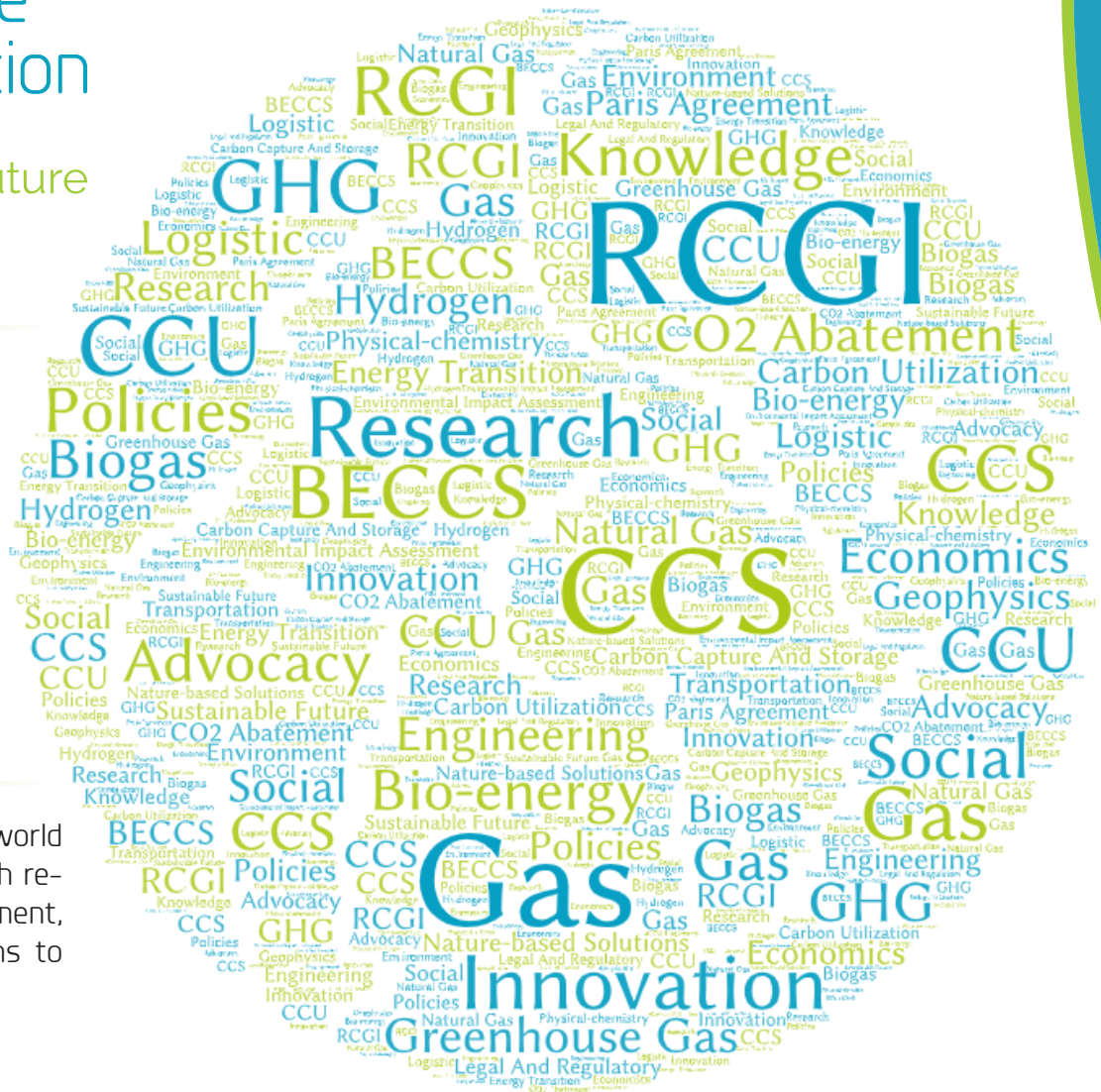
Mission

To develop research and innovation in energy transition towards the sustainable use of natural gas, biogas, hydrogen and management, transport, storage and usage of CO_2 on a global scale.

To spread awareness and make Brazil and other countries aware of the economic and energy potential of natural gas, biogas and hydrogen.

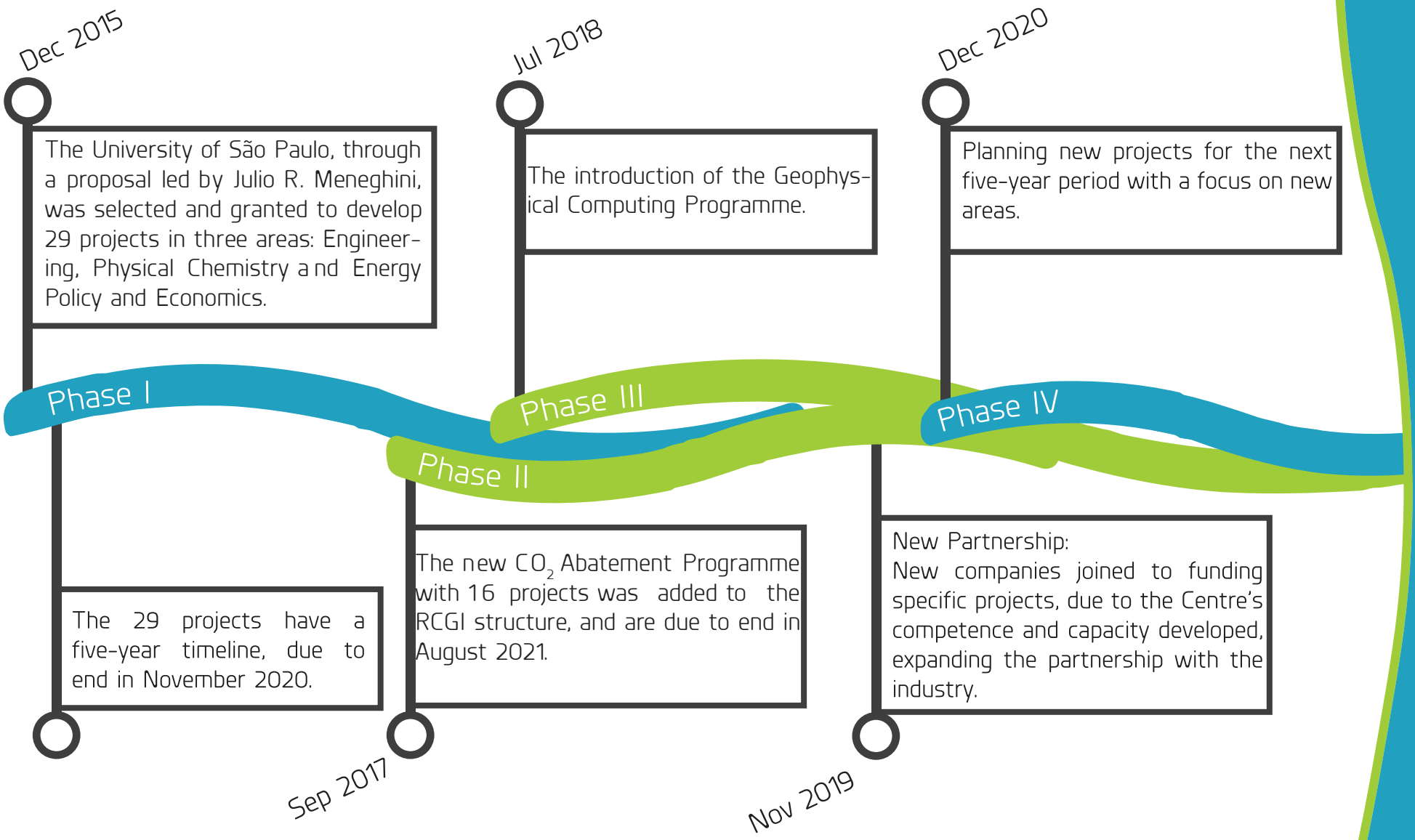
Vision

The Research Centre for Gas Innovation aims to be a world reference centre for fundamental and applied research related to natural gas, biogas, hydrogen and management, transport and storage of CO_2 and their contributions to the global sustainability of the 21st century.



RCGI History and Timeline

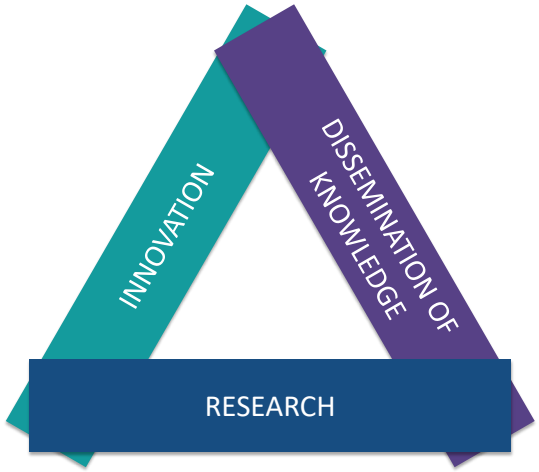
RCGI was established by a joint call for proposals from FAPESP and BG (British Gas), which later became part of Shell, after two rounds of workshops with specialists that helped to design the areas of research and structure a world-class leading research centre for gas innovation.



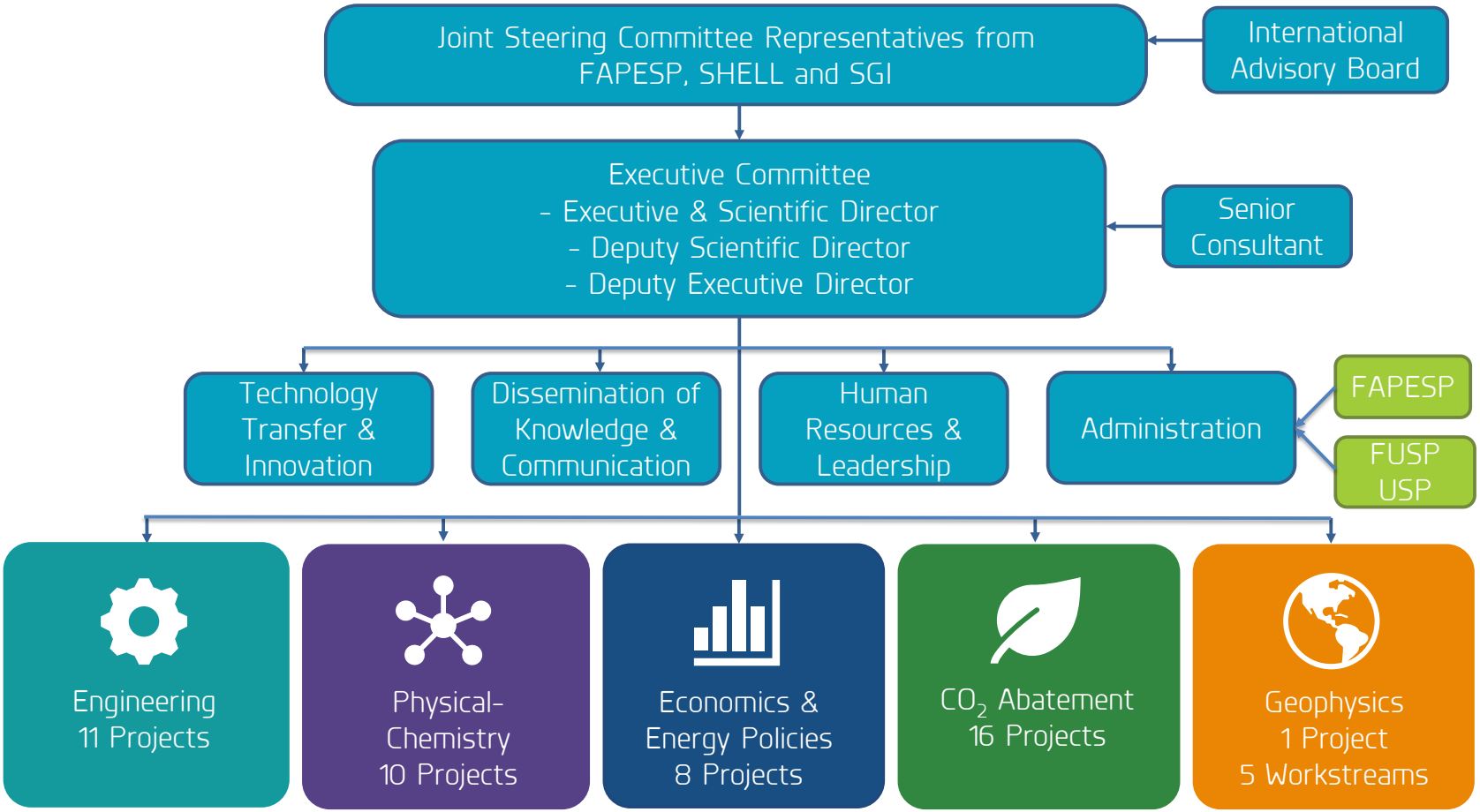
A centre for advanced studies on the mitigation of greenhouse gases

RCGI Governance Model

In the conception of the Centre and its conduction, we sought to gather a technical and scientific team of excellence, which grows by the day, in an inter and multidisciplinary way, to address the proposed technical-socio-economic-environmental aspects. Since then, the formed team has been working on projects in the area of energy and in solving problems involving greenhouse gas emissions resulting from the use of fossil fuels. Therefore, it is a Research Centre focused on investigation and scientific communication, innovation, technology and knowledge dissemination.



Organization Chart



RCGI Research Programmes and Projects

Engineering Programme

1. Development of an advanced natural gas burner using the oxy-fuel concept

2. Laboratory of advanced combustion diagnostics

3. Advanced systems for the use of mixed gas and diesel in internal combustion engines for methane emission mitigation

4. Feasibility/conceptual designs of energy efficient and environmentally friendly vessels with natural gas as a fuel

5. Design and optimization of storage systems by adsorption for natural gas

6. Optimization based on the adjoint method for natural gas storage systems

7. Hybrid power systems for ships

8. Modelling and numerical simulation

9. Studies of the application of laser (lidar) for atmospheric pollution measurements

10. Design optimization of labyrinth seals

29. Hybrid Vehicle Powered by Gasoline, Natural Gas or Bio-methane

Physical-Chemistry Programme

11. Development of an Advanced Natural Gas Burner using the Flameless Concept

12. Advancing fuel cells for operation with natural gas

13. Synthesis gas production by methane tri-reforming

14. Methanol production by CO_2 hydrogenation

15. Advanced Catalyst for Fischer-Tropsch Synthesis

16. A hybrid solar-gas system for natural gas steam reforming

17. Converting biogas to bioproducts

18. Microbial production of polyhydroxybutyrate (PHB) from methane (CH_4)

19. Structured ceramic membrane and supersonic device for CH_4 / CO_2 separation

20. Supported metal nanoparticles as catalyst for the PROX reaction

Energy Policies and Economics Programme

21. Creation of the Brazilian and São Paulo Legal Service of Natural Gas

22. Benchmark Studies on CO_2 abatement in the Natural Gas industry – Standardization, quantification methodologies, and protocols for energy savings and CO_2 abatement

23. Brazilian inventory of greenhouse gases and scenarios for reducing emissions related to natural gas

24. Estimation of price elasticities and income of Natural Gas in Brazil

25. Integrated Sustainability Analysis of Natural Gas as a Transportation Fuel in Heavy-Duty Vehicles - The Paulista Blue Corridor

26. Evaluation of small LNG and CNG supply options for transportation to off-grid locations; and planning expansion and operation of multimodal integrated networks

27. The Biomethane's contribution prospects to increase the supply of Natural Gas

28. Analysis of the potential household use of gas integrated to the electricity system in the city of São Paulo

CO_2 Abatement Programme

30. Innovative process for CO_2 conversion to high added value chemicals and fuels based on hybrid catalysts

31. Production of organic molecules from CO_2 and H_2O by photocatalysis in nano-oxides

32. Modelling, simulation and optimization studies on innovative CO_2 conversion technologies

33. Passive acoustic monitoring system for CO_2 leakage detection

34. Feasibility studies and simulations regarding the construction of salt caverns for CO_2/CH_4 capture, storage and separation in the pre-salt layer of Brazil

35. Detection of leaking CH_4 and CO_2 gases in the deep sea using ultrasound images with multiple

36. Carbon geological storage in Brazil: Perspectives for CCS in unconventional petroleum reservoirs of onshore paraná sedimentary basin and in turbidites from offshore sedimentary basins in southeastern Brazil

37. Simulation and optimization of CO_2 compressors and mixture of CO_2 and CH_4 in supercritical condition

38. High efficiency ejector for gas compression

Geophysics Programme

46. Software Technologies for modelling and inversion, with applications in seismic imaging

39. Development of gas supersonic separators – optimisation, numerical simulation and experiments

40. Corrosion behaviour study and / or degradation in aquous solution with CO_2 in the absence and presence of contaminants (NOX, SOX and H_2S) of materials used in the transport of supercritic CO_2 ($SCCO_2$)

41. Numerical simulations of internal flow in ducts carrying CO_2, CH_4 and oil employing molecular dynamics

42. Environmental impact assessment of CCS activities in Brazil and Legal Aspects

43. Determination of fundamental properties of gaseous mixtures of interest for the gas and oil industry in the presence of complex fluids

44. Laboratory for tests of supersonic gas separator technologies – Infrastructure

45. Laboratory for the characterization of physical chemical properties of CO_2, oil and natural gas in sub and supercritical conditions – Infrastructure

RCGI in Numbers

493 people have already been part of the centre

139 events were hosted

28 laboratories

4 awards received

3 pre-applied patents

283 papers in journals

506 papers in conferences

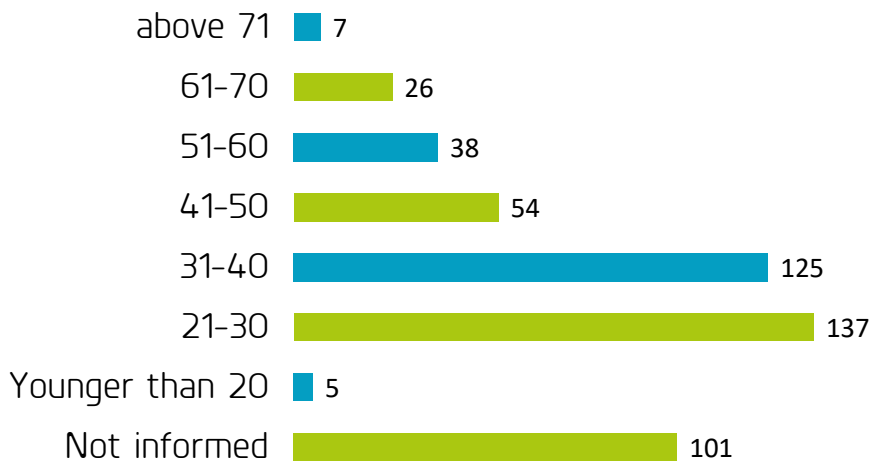
19 books and **71** book chapters

37 national partners

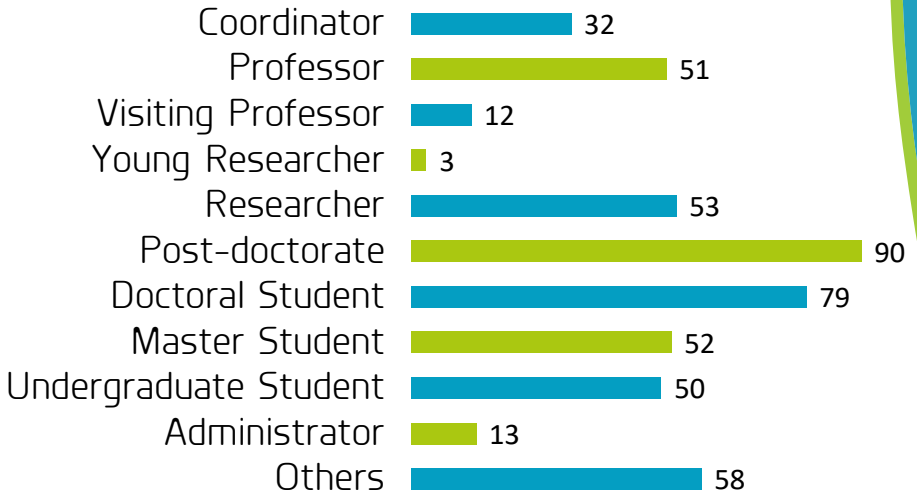
57 international partners

RCGI Member Profile

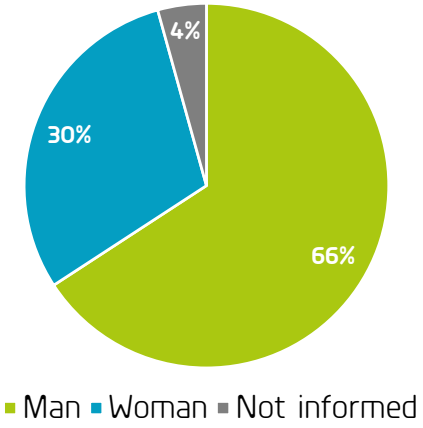
Age Group



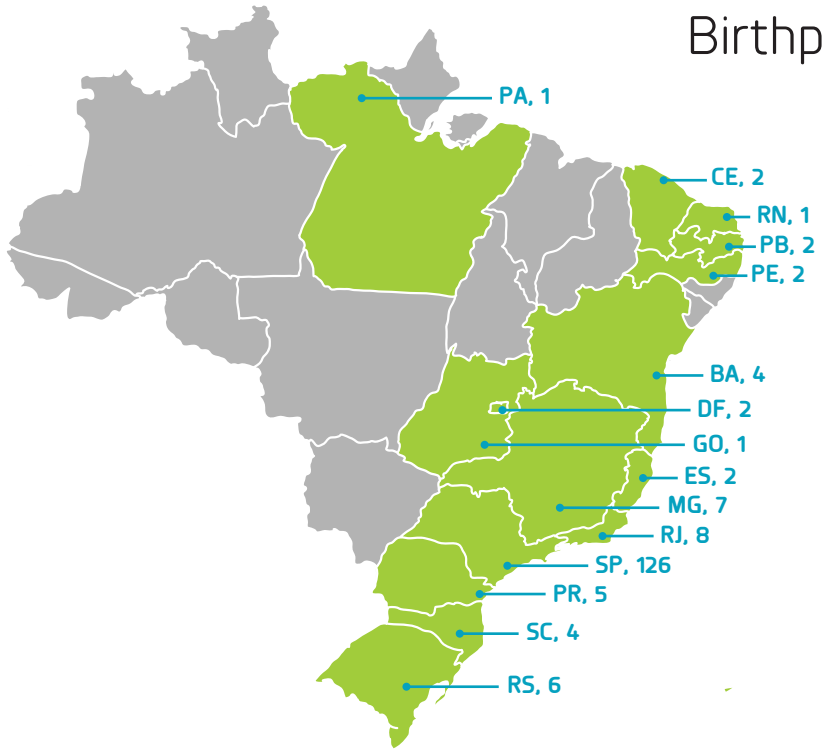
Position



Gender



Birthplace



Foreigners

America
Bolivia, 1
Colombia, 13
Cuba, 2
Peru, 4
United States, 7

Africa
Guine, 1
Nigeria, 2

Middle East
Iran, 5

Europe
Ireland, 1
France, 2
Portugal, 2
Spain, 1
United Kingdom, 2

Asia
Japan, 1

Towards a stronger commitment to the Sustainable Development Goals

Photo: Marcos Santos (USP Imagens)

Commitments to Sustainable Development

RCGI's commitments are linked to the 2030 Agenda, which establishes the main challenges to be faced for the development of society in the next decade. The 2030 Agenda was established by the United Nations in September 2015, containing 169 goals distributed into 17 Sustainable Development Goals (SDGs). The main focuses are people, the planet and prosperity, aiming to leave no one behind; that is, it proposes an advance of society that extends to all people. The 2030 Agenda expands the debate to deal with contemporary problems such as energy issues, cities, different inequalities and climate change, integrating the economic, social and environmental dimensions.

SUSTAINABLE DEVELOPMENT GOALS + Research Centre for Gas Innovation

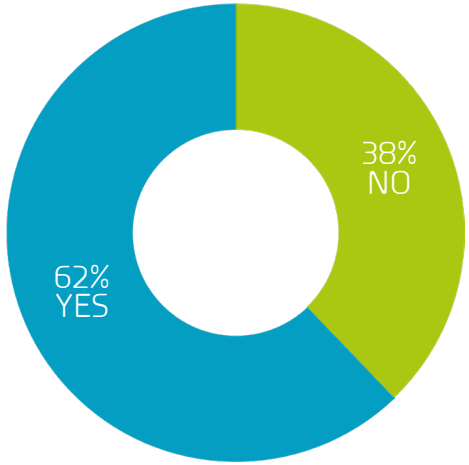
RCGI's perception of the projects impact on the SDGs

Aiming at understanding how the RCGI researchers perceived the impact of their projects on the 2030 Agenda SDGs, a survey was organised and divided into three blocks: the first one dedicated to the respondent's profile data, the second on the respondent's level of knowledge about the 2030 Agenda, and the third block requested the self-assessment of the respondent's perception of the impact on each of the 17 SDGs of the RCGI project in which he or she was participant (full research method in Appendix I).

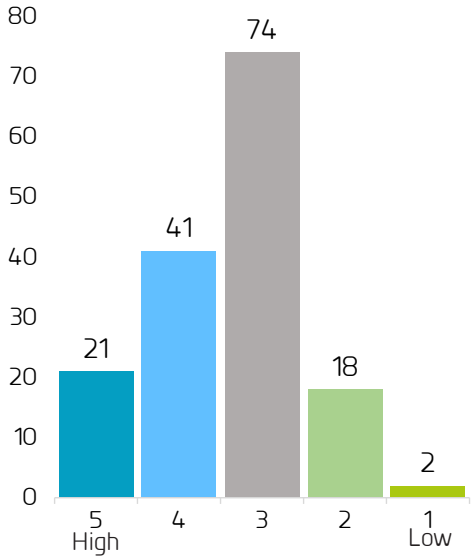
251 respondents

287 replies

Who knows the 2030 Agenda?



Degree of Knowledge

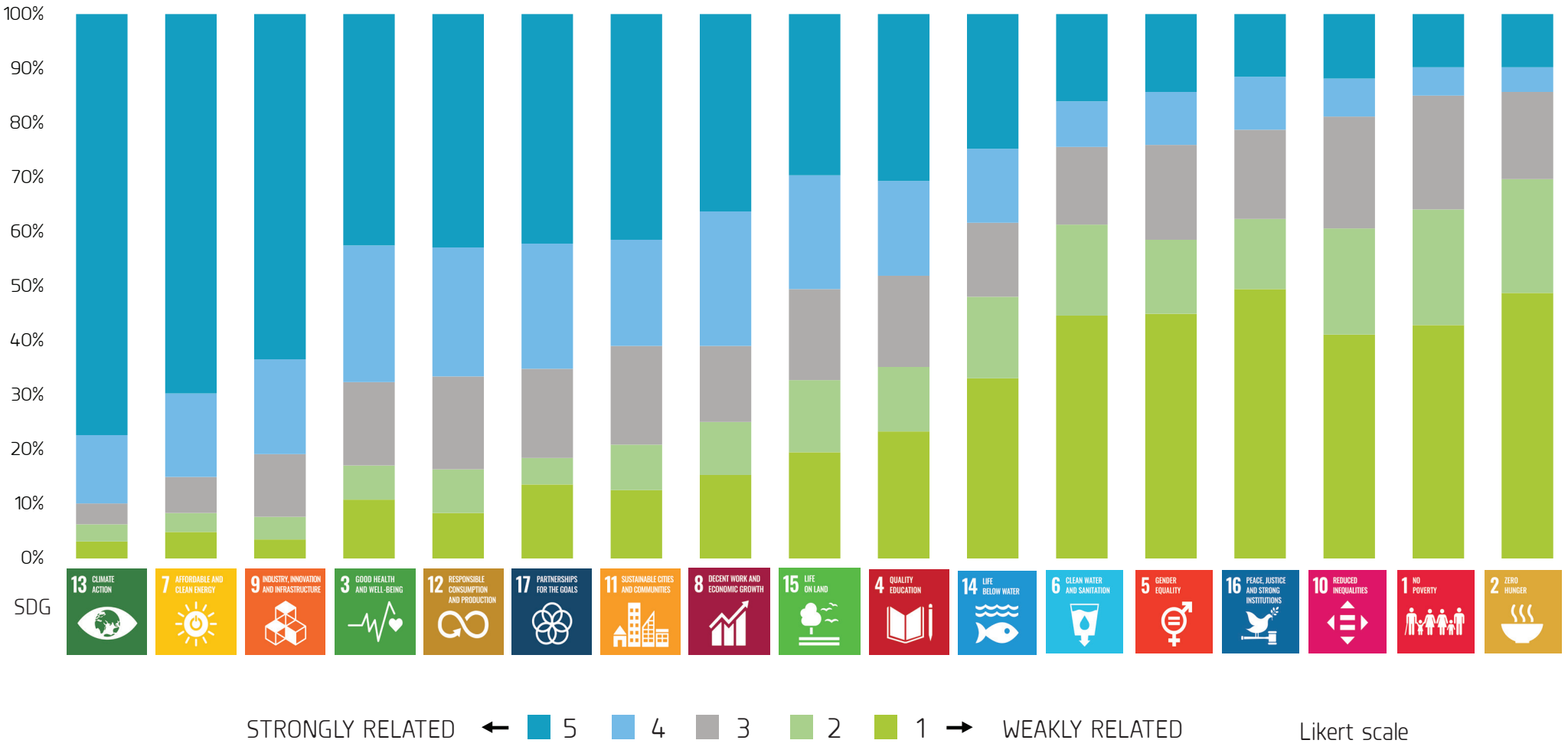


The result shows that although almost 60% of the researchers claim they are familiar with the 2030 Agenda and the Sustainable Development Goals, there is still a considerable number of researchers that need to learn about the theme. Moreover, even among those who stated to be familiar with the subject, most do not have a high degree of knowledge. Thus, there is room for disseminating information, which would bring the Centre closer to the most pressing needs of the global community.

"The dissemination of information on SDGs among researchers can collaborate to bring the Centre closer to the most pressing needs of the global community."

Overall RCGI SDGs Ranking

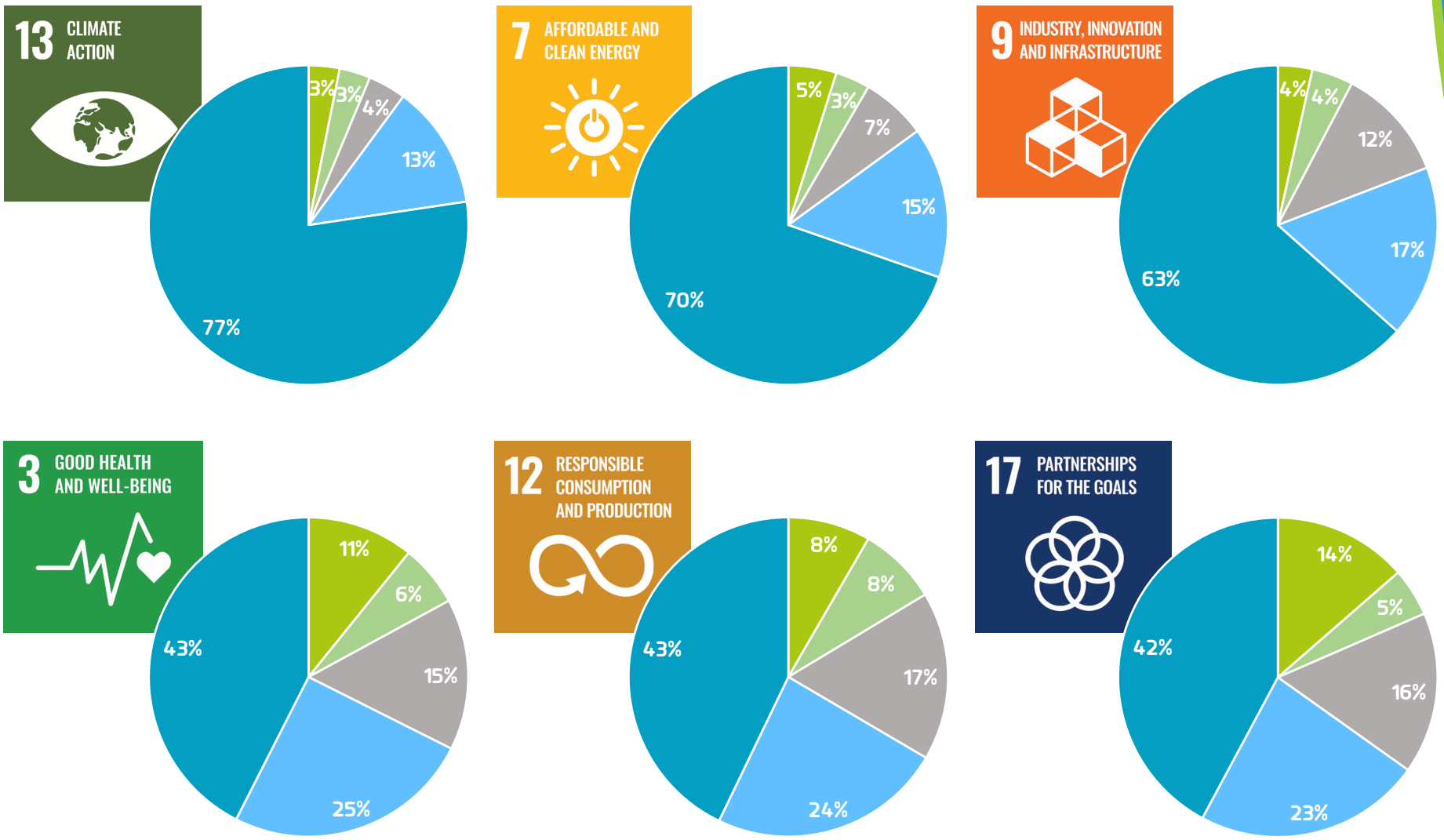
The figure below summarises the overall perceived impact of RCGI projects on the 17 SDGs.



"The researchers perceived the projects of the RCGI mostly aligned to SDG 13, SDG 7 and SDG 9 ."

Top 6 SDGs for RCGI

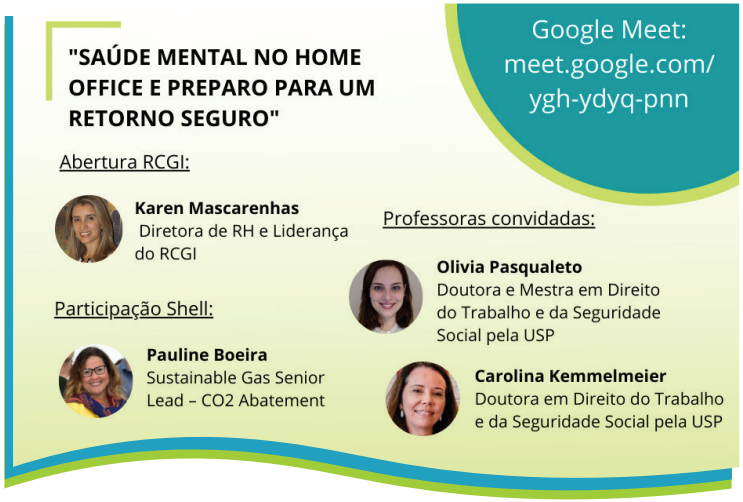
Among the 17 SDGs, the researchers perceived the projects in which they participate mostly contributing to the SDG 13 (Climate Action), the SDG 7 (Affordable and Clean Energy) and the SDG 9 (Industry, Innovation and Infrastructure). These results demonstrate the alignment of the mission of the Centre with those SDGs, as it has several projects focused on mitigation of greenhouse gases and investigating the sustainable use of natural gas, biogas, hydrogen, and the abatement of CO_2 emissions.



SDGs Ranking per Programme

Programme	1st	2nd	3rd	4th	5th	6th
Engineering	13 CLIMATE ACTION	7 AFFORDABLE AND CLEAN ENERGY	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	3 GOOD HEALTH AND WELL-BEING	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	11 SUSTAINABLE CITIES AND COMMUNITIES
Physical-Chemistry	13 CLIMATE ACTION	7 AFFORDABLE AND CLEAN ENERGY	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	3 GOOD HEALTH AND WELL-BEING	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	11 SUSTAINABLE CITIES AND COMMUNITIES
CO_2 Abatement	7 AFFORDABLE AND CLEAN ENERGY	13 CLIMATE ACTION	11 SUSTAINABLE CITIES AND COMMUNITIES	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	3 GOOD HEALTH AND WELL-BEING	8 DECENT WORK AND ECONOMIC GROWTH
Economics & Energy Policies	13 CLIMATE ACTION	7 AFFORDABLE AND CLEAN ENERGY	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	3 GOOD HEALTH AND WELL-BEING	17 PARTNERSHIPS FOR THE GOALS
Geophysics	17 PARTNERSHIPS FOR THE GOALS	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	4 QUALITY EDUCATION	8 DECENT WORK AND ECONOMIC GROWTH	7 AFFORDABLE AND CLEAN ENERGY	12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Actions promoted for Sustainable Development



Lecture "Mental health in the home-based working and preparation for a safe return".

Lecture "A global history of hydroelectric dams in Latin America: The Tucuruí case", by professor Frederik Schultz, from the University of Munster (Germany) with the participation of 70 students from the Guaraci Silveira Environmental Technical School, in São Paulo.

3 GOOD HEALTH AND WELL-BEING

Some of RCGI's projects have focused their research on the social welfare of the population, through studies regarding emission from fossil fuels. The data obtained in project 23 and 25 indicate that the high level of carbon dioxide emissions close to highways impact the health of people living in the proximity. Project 27 has been working on studies with fuels considered cleaner, such as ethanol and biogas through their georeferenced maps, which identify regions with the potential to produce energy from urban, rural and agri-industrial waste in the state of São Paulo.

Besides, the RCGI promotes, through the Health, Safety and Environment (HSE) group, lectures on mental and physical health with emotional support for all members of the Centre.

4 QUALITY EDUCATION

RCGI seeks to convey the knowledge produced at the Centre to experts as well as to elementary and high school teachers and students from public and private schools, besides the general public. Consequently, RCGI shares expertise in the areas of the Centre's projects through the Communication and Dissemination of Knowledge outreach activities.

Another contribution regarding SDG 4 is the RCGILex (project 21), a platform created to bring together and to analyse the legal and regulatory frameworks applied to the Brazilian natural gas sector, specifically in the state of São Paulo. The tool has added a website and a monthly newsletter sent to researchers, legislators, government institutions, media (print, electronic and digital version), among others.

Actions promoted for Sustainable Development

Integration event celebrating the Women's Day with RCGI members in 2020.

Together with the female leaders present in the various programs and projects of RCGI, the Centre seeks to stimulate the discussion about the challenges and achievements of women in the academia. It is worth mentioning the event that took place in 2019 in a partnership with the Austrian Ambassador to Brazil and Suriname, Irene Giner-Reichl. At the time, the Global Women's Network for The Energy Transition (GWNET) was launched for Latin America, a network that has been operating since 2017 throughout the world aiming at strengthening the role of women in the energy sector. Also, in this initiative, the "Dialogue on Renewable Energy and Energy Transformation" was promoted with the discussion of the theme "The Role of Women in Energy Transition".

The RCGI mission is directly linked to this SDG 7. Each of its 46 currently active projects seeks to improve the Brazilian energy matrix to better harness the country's resources and thus ensure cheaper, reliable, sustainable and renewable energy for all.

The triple-helix model adopted for the operation of the Centre emphasises the development of innovation through the joint investment of government agency (FAPESP) and a company (Shell), with the counterpart from a university (USP), to expand the generation of research, development and innovation in the country. Hence, scientific research is strengthened and becomes a source of knowledge for improving the technological capacities of the industrial sectors concerning energy efficiency and utilisation. In sum, this endeavour entails cleaner and more environmentally sound industrial processes.

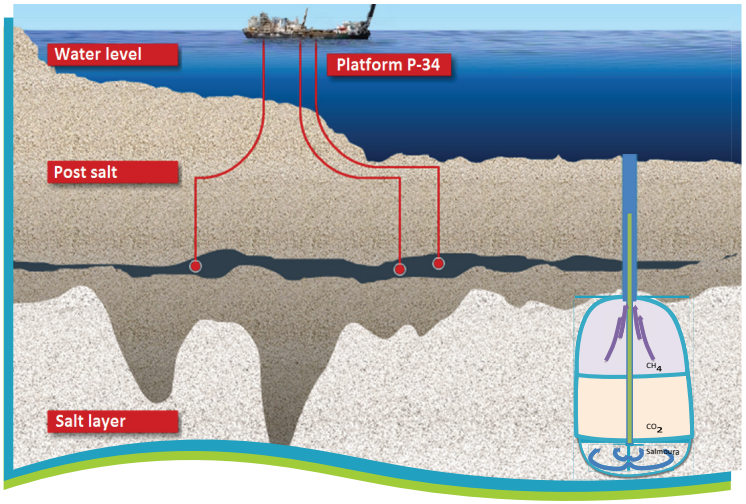
Actions promoted for Sustainable Development

The RCGI has been concerned with sustainable urban mobility. To this end, Project 25 is working to identify the truck drivers' perspectives about the use of natural gas as a transitional fuel for heavy load transportation.

RCGI project 34 studies the construction of salt caves for storing and separating CO_2 and CH_4 in the pre-salt region, producing a Carbon Capture and Storage System. It also seeks a substantial lowering of waste generation through prevention, reduction, recycling and reuse. Another contribution comes from the use of biomethane to increase the supply of natural gas through a study involving the production of biogas from vinasse, urban and rural waste and biomethane for vehicular use (project 27). The latter aids the dissemination of relevant information and lifestyle in harmony with nature, one of the aspects that the SDGs also raises. In the Physical Chemistry Programme, RCGI foresees the conversion of biogas into bioproducts; and microbial production of plastic with biodegradable properties (project 18).

Projects 30 to 45 are integrated into the search for solutions for storing CO_2 and other gases in pre-salt reservoirs, fighting climate change effects. RCGI seeks to contribute to the education of society, so that citizens are prepared and focused on sustainable decision-making, whether in private and daily initiatives, or in high impact collective actions. To this end, it contributes to forming and establishing the exchange of ideas with public and private leaders and the creation of relevant legislation. In this context, project 42 supports the development of these new technologies for mitigating greenhouse gases by establishing guidelines for their licensing, implementation and assessment of environmental impacts.

RCGI team in the field, collecting information through interviews with truck drivers about the possibility of using natural gas as fuel in trucks.

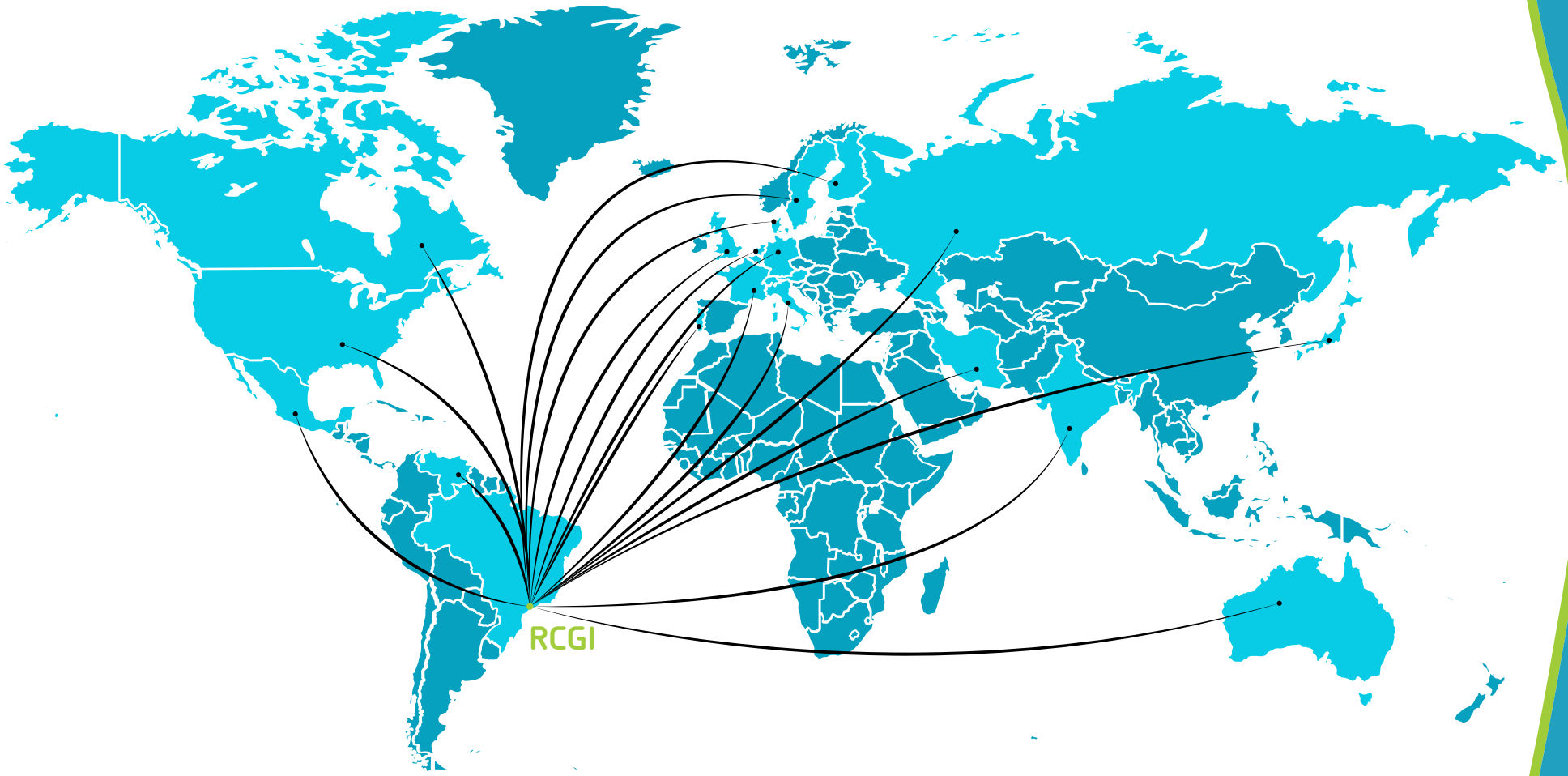


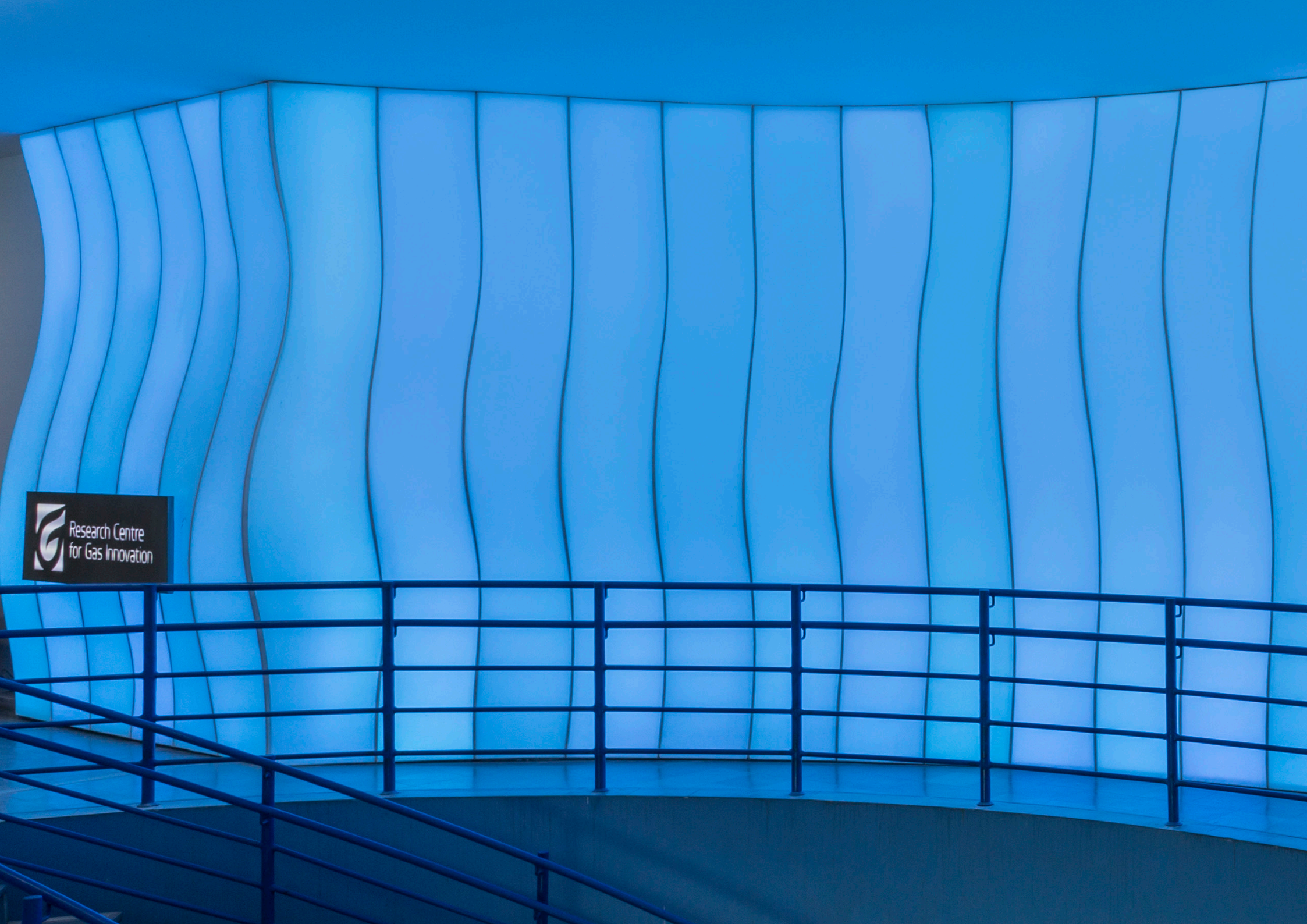
Development of technologies for separating CO_2 from CH_4 and storing CO_2 in the pre-salt layers. Besides, CH_4 can be used and monetised.

RCGI annually hosts an international event, which brings together academia, industry and government experts

Actions promoted for Sustainable Development

RCGI has established itself as an international centre, building partnerships for the goals with national and foreign entities focused on promoting research and dialogue with various public and private institutions.




Research Centre
for Gas Innovation

RCGI's SDG Team

Following three previous SDG assessments developed by different groups of RCGI research members, in August 2019, the present group was formed dedicated to the 2030 Agenda and the Sustainable Development Goals. This group aims to promote the dissemination of the SDGs in the centre, assessing the knowledge of researchers regarding the goals and relating them to the objectives of their research programs and projects. The work of the group is expected to help all RCGI researchers to better understand the SDGs to align the projects research outputs to that framework.

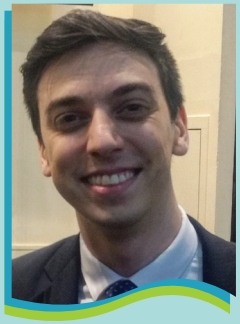
M.Sc. Alexandre de Barros Gallo, PhD student in Energy (IEE/USP and Imperial College London), Researcher of project 22 (RCGI) and member of ISO/TC 301: Energy Management and Energy Savings. He is currently working in the areas of Energy Efficiency, Energy Management and Reduction of CO_2 Emissions. He is from São Paulo, SP, Brazil.

M.Sc. Ana Luiza Fontenelle, PhD student in Energy System Planning (FEM/Unicamp), Researcher at project 42 (RCGI). The main research interests are Water-Energy Nexus, Climate Change and Sustainable Development. She is from Campinas, SP, Brazil.

M.Sc. Anna Luisa Abreu Netto, PhD student in Environmental Science (IEE/USP), Researcher of project 26 (RCGI). She is currently working with public perception of technologies related to climate change and energy transition. She is from Salvador, BA, Brazil

Ph.D. Drielli Peyerl, Young Investigator (FAPESP/IEE/USP), Coordinator of project 26 and Researcher of project 42 (RCGI). She is currently working in the areas of Energy Transition, History of Energy and Technology, and Decarbonization of the electric and transport sectors. She is from Rio Negrinho, SC, Brazil.

M.Sc. Karen Louise Mascarenhas, Dir of Human Resources & Leadership, member of the Executive Committee (RCGI), PhD std in Social Psychology (IP/USP/Imperial College London) and Assoc Prof at FGV-SP. Research collaborator of projects 21 and 42. Develops research into Leadership, Public Perception and Social Licence to Operate, SDGs, Behavior and Communication. She is from São Paulo, SP, Brazil.



B.Sc. Luis Guilherme Larizzatti Zacharias, Master student in Environmental Science (FAPESP/IEE/USP), researcher of project 26 and project 42 (RCGI). He is currently working in the areas of Energy Transition, Decarbonization of the transport sector, and Strategic Environmental Assessment. He is from São Paulo, SP, Brazil.

Appendix I: Research Method

The assessment of the contribution of the projects developed within the Research Centre for Gas Innovation (RCGI) to the United Nations (UN) Sustainable Development Goals (SDGs) was initially preceded by research on the perspective of this type of evaluation in academia. Several authors have discussed the role of the universities in the implementation of the SDGs, such as the Sustainable Development Solutions Network report dedicated to guidance for universities (SDSN Australia/Pacific, 2017)[3].

One of the main discussions refers to the most appopriate methodology to be applied to collect the assessment data. Thus, to develop the impact assessment of the projects carried out within the RCGI, literature review was conducted.

Castor et al. (2020)[4] and Johnsson et al. (2020)[5] present several tools to conduct an impact assessment of research projects on the SDGs with applicability to different scopes. Considering that this is an evaluation of research projects within a university research centre, the SDG Impact Assessment Tool, developed by the Gothenburg Centre for Sustainable Development (GMV), was a potential candidate. Eriksson et al. (2019)[6] presented the SDG Impact Assessment Tool in detail. The tool available online was developed in the form of self-assessment, in which the impacts, in each of the 17 SDGs, are classified in terms of positive/neutral/negative and direct/indirect. The use of such an approach serves as a starting point for companies or other organisations that wish to learn about the SDGs, to minimise their adverse impacts, and develop a broader sustainability strategy.

The application of a self-assessment model in the form of a questionnaire could be an efficient way to collect the data needed for the research objective within the RCGI. Several authors have already applied this type of methodology as Dalampira & Nastis (2020)[7] in the evaluation of the perception of experts about the relationship between the SDGs and the pillars of sustainable development, Salvia et al. (2019)[8] in the assessment of the relationship between local and global challenges through scientific research and its relationship with the SDGs, Zamora-Polo et al. (2019)[9] in the assessment of the perception of young students of higher education on the SDGs, and Poza-Vilches et al. (2020)[10] in the strategic planning of environmental management in municipalities.

Given the experiences with the use of a questionnaire to assess the perception of the SDGs, a self-assessment questionnaire on the impact on the SDGs of research produced by RCGI projects was developed. The questionnaire is divided into three blocks: the first dedicated to the respondent's profile data, the second on the respondent's level of knowledge about the 2030 Agenda, and the third block collected the self-assessment of the perception of the impact on the SDGs of the RCGI project in which the respondent was a team member. If the respondent participates in more than one project, they can respond to that third block more than once.

The first block, on data on the respondent, was formulated to enable the stratified evaluation of the answers, in addition to collecting a perspective on the demographics of the Research Centre. The second block is essential to capture how researchers at the Research Centre were aware of the 2030 Agenda and the SDGs. The third block involved the self-assessment of the perception of the impact on the SDGs of the RCGI project, inspired by the references mentioned above. The respondent was invited to give his/her perception of how his/her project relates to each of the 17 SDGs. For each SDGs, the respondent must choose an option on a five-level Likert Scale, the extremes responses of which are "Not relevant" and "Relevant." To finalise the questionnaire, a last optional question was included in which the respondent was invited to express freely on which attitudes could drive the project to enhance its relevance to impact to a great extent and/or to a broader range of SDGs.

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