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**POLICY AND REGULATORY FRAMEWORK APPLICABLE TO THE  
USE OF BIOGAS AND BIOMETHANE FROM AGRO-INDUSTRIAL  
WASTE FOR PRODUCTIVE USES AND MOBILITY  
(GAP ANALYSIS)  
REVISED**

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## EXECUTIVE SUMMARY

- This report builds on prior work on regulatory and legal aspects related to biogas and biomethane applications for the agro-industry in Brazil. It examines regulatory strengths and weaknesses, also suggesting bridging options to help overcome existing regulatory gaps on biogas and biomethane in Brazil.
- The main findings of this analysis draw attention to three major areas that need to be addressed: Area 1) the urge of establishing an inter-ministerial federal entity with clear mandate, organizational set up, roles and responsibilities to develop federal policy guidelines specifically devised for biogas and biomethane applications, including biogas' classification which is a crucial aspect for delineating competencies and regulation<sup>1</sup>; Area 2) inadequacy of regulatory information base since data is dispersed, not systematized and, in some cases, outdated making it difficult to access and implement<sup>2</sup>; and Area 3) limited adequacy of financing lines which do not take into account peculiarities involving biogas and biomethane projects such as its sustainability features and lack of specific financial incentives.
- The following tables synthesize the gaps, recommendations, bridging activities and inputs gathered in the present study:

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<sup>1</sup> Considering the current classification of biogas as biofuel, only the Union has legislative and executive competence towards biogas and biomethane, including its distribution. Thus, State policies are likely to be considered unconstitutional and with no legal effects if the current classification does not change. It is also important to stress that Parana's Draft Bill was considered unconstitutional by the Commission of Justice and Constitution and thus rejected by Parana's house of representatives (First Report , IV.3). Therefore, the State of Parana seems to be aware of the constitutional aspects presently involving biogas

<sup>2</sup> To this regard, the results achieved by MAPA's low carbon pig farming project suggest that lack of information or difficult access to information is one of the barriers regarding biogas. Such aspect was also mentioned in PROBIOGAS and Abiogas reports as a problem related to biogas, particularly when compared to other areas such as biodiesel in which MME's website contains information on the programme, legislation, Q&A, news and documents. Associations or a chamber of commerce can organize and systematize information. Still, MAPA's has developed a one year project on this (low carbon pig farming) which can be expanded and enhanced by GEF.

AREA 1				
STRENGTHS	WEAKNESSES	RECOMMENDATIONS	BRIDGING ACTIVITIES	INPUTS
<p>S.1 -Institutional Infrastructure on complementary norms is already in place, which facilitates synergies and provides a ready platform</p> <p>S.2 - Existence of extensive complementary norms and policies (i.e. renewable energy, non-renewable energy, agriculture and environmental)</p> <p>S.3- Important specific regulation is being implemented (ex: ANP Resolution 08/2015; Rio Grande do Sul policy on Biomethane)</p>	<p>W.1 - Absence of an inter-ministerial institution with a clear and specific mandate on biogas and biomethane on the federal level</p> <p>W.2- Lack of a specific national strategy and policy on biogas and biomethane (discussion on states constitutional competency to legislate on biogas and biomethane considering the current biogas' classification as biofuel)</p>	<p>R.1- Establish an inter-ministerial entity with clear mandate, organizational set up, roles and responsibilities to coordinate integrated and interdisciplinary debate on biogas and biomethane.</p> <p>R.2- Establish specific federal guidelines that adequately consider the peculiarities involving the product and the sector. The national programme on biogas and biomethane will (i) revise the current biogas classification (ii) set up federal guidelines for a specific regulatory framework; (iii) define funding and financial mechanisms; and (iv) support technological base.</p>	<p>B.A.1- Engage the formalization of a technical inter-ministerial working group with a clear mandate and central role in discussing a national programme on biogas and biomethane.</p> <p>B.A.2- Capacity building: organize trainings and technical visits for key policy-makers</p> <p>B.A.2- Organize participatory consultative workshops with biogas associations, national consultants, technical, academic institutes, states representatives, biogas industry and the inter-ministerial</p>	<p>I.1- Contracts with local experts, international consultant, expenses with workshops material, travel costs and other miscellaneous expenses related to the workshops.</p>

			working group to promote better dialogue towards the creation of a national strategy on biogas and biomethane as well as secondary norms.	
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AREA 2				
STRENGTHS	WEAKNESSES	RECOMMENDATIONS	BRIDGING ACTIVITIES	INPUTS
S.1 Data availability on complementary regulation and legislation is high	<p>W.1- Difficult access to relevant regulatory information.</p> <p>W.2- Regulatory Information is dispersed and non-systematized.</p> <p>W.3 - Some available information is outdated.</p> <p>W.4 – Some complementary</p>	<p>R.1- An up-to-date and easy-to-access regulatory database should be prepared and maintained on the federal and Parana levels<sup>3</sup>.</p> <p>R.2 – Preparation of a Guideline to ease interpretation and promote in-depth assessment of relevant complementary regulation and commercial opportunities/arrangements</p> <p>R.3- Publicize initiative and disseminate information.</p>	<p>B.A.1- Inventory, organization, and up dating of existing regulatory and legal data (Federal and Parana). The inventory could also encompass commercial opportunities and arrangements as well as benchmarking cases.</p> <p>B.A.2 – Set up a</p>	I.1- National contracts, expenses with visual and printing material; travel costs and other miscellaneous expenses related to the workshops and training

<sup>3</sup> At the federal level MAPA could administrate this. They already have a general database related to the low carbon pig farming project, which can be enhanced with regulatory and even commercial information.

	<p>norms can be improved to foster biogas projects (ex: ANEEL Resolution 482/12)</p>	<p>R.4 – Improve key complementary norms (i.e. ANEEL Resolution 482/12)</p>	<p>regulatory database (Federal and Parana)</p> <p>B.A.3- Produce a practical Guidebook (Federal and Parana)</p> <p>B.A.4- Organize a series of workshops to publicize the initiative, disseminate information and present the Guidebook on the Federal and Parana's level.</p> <p>B.A.5 – Organize dialogue sessions and workshops with biogas associations, biogas industry, academic/ technological institutes, national experts and key ANEEL policy makers, aiming at improving ANEEL's Resolution 482/12.</p>	
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### AREA 3

STRENGTHS	WEAKNESSES	RECOMMENDATIONS	BRIDGING ACTIVITIES	INPUTS
<p><b>S.1-</b> Existence of financial lines from BNDS, Bank of Brazil, BRDE with competitive interest rates, funding and grace periods when compared to private banks.</p>	<p><b>W.1. –</b> Difficult access to existing financial lines which do not take into account peculiarities concerning biogas and biomethane projects.</p> <p><b>W.2-</b> lack of a fiscal policy to provide incentive mechanisms, particularly tax incentives and other specifically designed incentive schemes towards biogas and biomethane applications</p>	<p><b>R.1-</b> Improve ABC waste treatment financing line to incorporate suggestions from biogas associations such as project finance, which does not require collateral<sup>4</sup>.</p> <p><b>R.2 -</b> Adoption of adequate financial mechanisms and incentives to enable small and medium-scale rural farmers to derive maximum benefit (ex: tax holidays at the Parana (VAT) and Federal levels (IPI, II, PIS/COFINS); and other incentives).</p>	<p><b>B.A.1-</b> Capacity building: organize a series of trainings on evaluation of biogas and biomethane projects in the agro-industry and peculiarities of such projects to key staff from BNDS, Bank of Brazil and BRDE. Partnerships with SENAI and SENAR might be explored.</p> <p><b>B.A.2 -</b> Engage the formalization of a technical working group within MAPA to enhance the ABC waste treatment line. Organize workshops to promote better dialogue among biogas associations industry, national experts and governmental officials</p>	<p><b>I.1-</b> Contracts with national consultants; travel costs; and miscellaneous expenses related to the trainings and workshops</p>

<sup>4</sup> It is worth mentioning that Brazilian banks tend to require collateral for what they consider high risk projects. In PROINFA, for example, no collateral is required since ELETROBRAS is responsible for contracting renewable energy sources through 20-year purchase agreements. On this basis, ELETROBRAS acts as a sort of guarantor hence no collateral is required.

			<b>B.A.3- Engage the formalization of a technical working group at the Parana level to study the implementation of VAT holidays for biogas and biomethane projects. Organize workshops to promote better dialogue among biogas associations, industry, national experts and governmental officials</b>	
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## **ABBREVIATIONS**

ABC PLAN Low Carbon Agriculture Sectorial Plan

ABC PROGRAMME Low Carbon Agriculture Programme (financial line for reducing greenhouse gas emissions in agriculture)

ABBM Brazilian Association of Biogas and Methane

ABiogas Brazilian Association of Biogas and Biomethane

ANEEL Brazilian Electricity Regulatory Agency

ANP Brazilian Regulatory Agency for Oil, Gas and Biofuels

BNDES Brazilian National Development Bank

BRDE Regional Bank for the Far South Development

Casa Civil Chief of Staff or Civil Office of the Brazilian Presidency

CCEE Brazil's power trade chamber

CIBiogás-ER International Centre on Renewable Energy – Biogás

CNPE National Council for Energy Policy

COFINS Social levy for social contribution on Revenues or Social Integration Tax

COMPAGAS Parana's Natural Gas Company

CONAMA National Council for the Environment

CONTAG National Confederation of Agricultural Workers

COPEL Parana's Energy Company

CORSAN Rio Grande do Sul Sanitation Company

CNA Brazilian Confederation of Agriculture and Livestock

ELETRONBRAS Brazilian Electric Power Company

EMBRAPA Brazilian Agricultural and Livestock Research Corporation

EPE Energy Research Company

FINEP Public Company of Science, Technology and Innovation

IBAMA Brazilian Federal Environmental Agency

ICMS State Valued-added Tax

II Import Tax

IPI Tax on Manufactured Products

GIZ German Agency for International Cooperation

MAPA Ministry of Agriculture, Livestock and Food Supply

MCid Ministry of Cities

MCTI Ministry of Science, Technology & Innovation

MDIC Ministry of Development, Industry and Trade

MF Ministry of Finance

MMA Ministry of the Environment

MME Ministry of Mines and Energy

MPOG Ministry of Planning and Budget

Ministério Público Office of Public Prosecution

PARANA ABC Parana's Low Carbon Agriculture Plan

PNA National Agroenergy Plan

PROBIOGAS Technical Cooperation Project on Biogas between the Brazilian and German Government

PROINFA Brazilian Renewable Energy Incentive Programme

PRONAF National Family Farming Incentive Programme

SANEPAR Parana's Sanitation Company

SENAI National Service for Industrial Training

SENAR National Rural Training System

SULGAS Rio Grande do Sul Natural Gas Distribution Company

## **I. OBJECTIVE AND METHODOLOGY**

This report builds on prior work on regulatory and legal aspects related to biogas and biomethane applications for the agro-industry in Brazil. In the previous assessment, key policies, laws and financial incentives were reviewed as well as some challenges associated with them. The present study analyses regulatory strengths and weaknesses, also suggesting bridging options to help overcome existing regulatory gaps on biogas and biomethane in Brazil.

The methodology for identifying gaps centred on 1) data collected in the previous phase, including the result of Clbiogas workshop in Foz do Iguaçu in May; and 2) interviews with key stakeholders from federal and state (Parana and Rio Grande do Sul) government as well as non-governmental institutions to validate accuracy of the findings from the first phase and obtain further specialized insights on issues surrounding biogas and biomethane applications within the Brazilian agro-industry. Therefore, the interviews provided an opportunity to validate and refine previous data collected in the first report as well as discover additional information.

### **I.1. STAKEHOLDERS INTERVIEWS**

During the first phase, the consultant developed a list of key stakeholders to participate in the interview process (ANNEX 1). The interviewees were selected based on their expertise with biogas/biomethane issues in Brazil, participation in the making of ANP Resolution 08/15 as well as on recommendations from other interviewees, UNIDO, and Clbiogas. Thus relevant representatives from governmental bodies and biogas associations were interviewed throughout June. In total, 18 individual stakeholders were interviewed as part of the data gathering and validation process. Interviews on the federal level were face-to-face whereas interviews on the state level were mainly conducted through Skype and telephone<sup>5</sup>. The interview protocol included a brief explanation of the project, with emphasis on its the regulatory aspects, and open ended questions based on a semi-structured questionnaire drafted in the first phase and validated by UNIDO (ANNEX 2). Because of the open ended feature of the interviews, stakeholders were allowed to more thoroughly comment the aspects of greatest importance to them, representing a variety of perspectives and backgrounds on

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<sup>5</sup> Except SULGAS whose representative opted for providing written answers.

biogas and biomethane issues in Brazil. Discussions were recorded<sup>6</sup> and notes were taken as the sessions were in progress. Finally, those records and notes were reviewed and organized in categories according to basic themes selected by cluster of comments made by interviewees (ex: Lack of a central federal institution; Lack of specific national policy; Non-systematized regulatory information; Difficult access to financing lines; and others). Results are discussed below.

## **II. KEY STRENGTHS, WEAKNESSES AND RECOMMENDATIONS OF POLICIES AND REGULATION**

Biogas and biomethane regulation in Brazil is still at an early stage. While important specific regulation is being implemented such as ANP Resolution 08/2015 and Rio Grande do Sul Policy on Biomethane (Law n. 14.864/16), gaps were identified in view of the absence of a central regulatory institution within the Federal Government and, consequently, lack of a specific national policy and general guidelines. Furthermore, despite the existence of a wide range of complementary norms on renewable energy, energy, environment and agriculture that apply to biogas and biomethane applications in the agro-industry, the lack of a centralized and updated regulatory database hinder access to relevant information and implementation of those regulations in biogas projects. Finally, the existing financing lines do not adequately address the peculiarities of the biogas and biomethane market in Brazil such as its sustainable features.

### **II.1- BIOGAS AND BIOMETHANE POLICY**

#### **II.1.1 STRENGTHS**

Specific regulation on biogas and biomethane is being implemented at the federal and state levels. In addition, Draft Bill 6559/13 (federal house of representatives) aims to establish a national policy on biogas. Indeed, whereas ANP enacted Resolution 08/15, the state of Rio Grande do Sul<sup>7</sup> passed a law in May 2016 (Law n. 14.864/16)<sup>8</sup> establishing a State Policy and 'Gaúcho' Incentive Programme on

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<sup>6</sup> Except telephone's interviews and SULGAS' questionnaire.

<sup>7</sup> Although the project focus in the state of Paraná, it is important to stress this particular initiative from the state of Rio Grande do Sul (Southern region), especially because it is related to the 'aftermath' of ANP Resolution 08/15.

<sup>8</sup> <https://www.legisweb.com.br/legislacao/?id=320440>

biomethane with a strong environmental focus<sup>9</sup> and state economic development.

According to SULGAS' representative during the interview process, Rio Grande do Sul's policy (State Law n. 14.864/16) is linked to the result of SULGAS Public Call 01/15 on biomethane in November 2015. To support such a claim is the fact that the Draft Bill was presented in February 2016 – that is immediately after SULGAS officially declared that Public Call 01/15 on biomethane had failed - and was approved by the state house of representatives in a very fast track (only 4 months). On 10<sup>th</sup> June 2016, SULGAS informed that it would launch a second public call on biomethane, probably in July 2016<sup>10</sup>, which rather reinforces the direct link between SULGAS initiative and state law-making on biomethane.

Rio Grande do Sul's Law n. 14.864/16<sup>11</sup> is an extensive and general document whose key aspects are summarized in the table below:

General Principles (Article 2)	Sustainable development and quality of life
Main Objectives (Article 3)	(i) Fostering development; (ii) expanding labour market and assessing renewable resources; (iii) reducing the level of greenhouse gases in the state; (iv) promote appropriate final disposal of organic waste; (iv) use non-conventional sources through economic use of available inputs and technologies; (v) attract investments; (vi) increase - on economic, social and environmental basis- biomethane's share on the state energy matrix; (vii) attract infrastructure investments for biomethane's distribution

<sup>9</sup> Most probably due to constitutional competences on environmental matters in which states have more legislative room, considering that the Union has private competence to legislate on energy (renewable and non-renewable) issues (see First Report, Section I.1). Still, questions on the constitutionality related to Rio Grande do Sul law on biomethane remain.

<sup>10</sup> <http://www.sulgas.rs.gov.br/sulgas/index.php/noticias-sala/882-distribuicao-de-combustivel-natural-e-renovavel-e-aposta-da-sulgas> (June 20th 2016)

<sup>11</sup> So far, this state law from Rio Grande do Sul had no repercussion on the federal Draft Bill regarding Biogas conducted by the Federal House of Representatives. The State of Parana was working on a draft bill on biogas, but it was considered unconstitutional by the Commission of Justice and Constitution and thus rejected by Parana's house of representatives. The state of Santa Catarina is currently discussing a Draft Bill on agro-energy which encompasses biogas.

	and commercialization; (viii) encourage research and development related to biomethane; (ix) promote biomethane's technological development with a view to rational use of natural resources
<b>Main obligations (Article 8)</b>	(i) Support and foster biomethane's productive chain in the state of Rio Grande do Sul; (ii) ensure biomethane's purchase by the state concessionaire; (iii) seek economic valorisation of organic wastes and reduce greenhouse gases in the state; (iv) diversify the state energetic matrix, decentralizing and interiorising development; (v) establish incentive mechanisms; (vi) promote integration and articulation among other state policies; (vii) strengthen associations, civil society organizations, cooperatives and economic enterprises that benefits biomethane's productive chain; (viii) foster knowledge generation and dissemination through scientific research and development.
<b>Main instruments and mechanisms (Articles 9, 10 and 11)</b>	(i) Purchase and commercialisation agreement; (ii) certification; (iii) public-private partnerships, agreements, cooperation with public and private institutions; (iv) incentive towards cooperative's creation and development as well as other forms of association regarding biomethane's productive chain; (v) energetic plan and biomethane Atlas; (vi) sanitation and environmental inspection and control; (vii) technical and financial cooperation between public and private sector in regard to scientific research, methods, process and technologies related to biomethane's productive chain; (viii) environmental education; (ix) financing lines and tax incentives (specific financing lines, including subsidies;

	different and favourable tax treatment towards biomethane applications); (x) creation of a Management Committee (members of such committee, however, were not specified in the law)
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Such a specific regulation, along with initiatives from PROBIOGAS, COPEL, Itaipu, Cibiogas, Draft Bill 6559/13 and ABiogas represent important policy-making milestones and first attempts towards a more solid regulatory apparatus and long-term vision on biogas and biomethane in Brazil. Thus, they can be understood as a basis for further discussions on what needs to be implemented to aid biogas and biomethane development in the country.

### II.1.2. WEAKNESSES

Brazil lacks a national, specific policy and legal approach towards biogas and biomethane. Indeed, as mentioned in the First Report, the policy responsibility for biogas and biomethane development at the federal level is not clear which is consequently reflected upon regulation. In this regard, special attention has been paid to the results of PROBIOGAS survey conducted with 38 biogas companies and institutions<sup>12</sup> (see First Report, section II.1.1.b) as well as the interview phase for the absence of a coordinating federal institution and specific policy on biogas was a common gap raised by all interviewees.

The lack of a coordinating institution with clear mandate and federal policy specifically dealing with biogas and biomethane issues signalizes that low priority is given by the Federal Government meaning inadequate financial and human resources. Considering that the Union occupies a protagonist role in Brazilian policy-making, particularly on energy issues (see First Report, Section I), the absence of a central and specific policy on biogas and biomethane may affect agencies and investors perspective on biogas market in Brazil.

<sup>12</sup> <http://www.cidades.gov.br/images/stories/ArquivosSNSA/probiogas/Barreiras-Mercado-Biogas.pdf> (10 May 2016). The companies interviewed by PROBIOGAS pointed out that it is difficult to plan a project without a specific biogas and biomethane regulation.



Regarding this, the ANP representatives who drafted Resolution 08/15 on biomethane mentioned during interview that they did not receive any general guidelines from the Ministry of Mines and Energy. **They also expected that, after Resolution 08/15 publication, the market and/or state concessionaires would raise questions and doubts on practical aspects of the norm, which would allow the technical team to conduct further studies and improve regulation.** ANP and MME representatives mentioned aspects such as (i) biomethane transportation; (ii) access to the pipeline; (iii) producers' authorization; (iv) monitoring and quality control; and (v) competition with natural gas, which is a consolidated market as important points that have not been addressed by Resolution 08/2015 on biomethane. However, since the launch of Resolution in January 2015, stakeholders have not contacted ANP Working Group, which denotes that the Technical Resolution has not yet been fully implemented in practice.

An attempt was made by SULGAS through Public Call 01/2015 on biomethane (see First Report, section II.1.1.a) launched 6 (six) months after the publication of ANP Resolution.<sup>13</sup> The bid, however, received only one proposal from another state company from Rio Grande do Sul that was declassified later on. According to SULGAS' representative, biomethane's production in Brazil is still incipient and the lack of national technologies as well as lack of market information contributed to the failure of Public Call 01/2015. Biogas Association's representatives (ABBM and ABIOGAS), on the other hand, pointed out in the interviews that the low price offered by SULGAS in the bid was a key factor for failure. In addition, an extensive state law on biomethane was approved and enacted a few months after Public Call 01/2015 results. After Sate Law n. 14.864/16 (Rio Grande do Sul) enactment, SULGAS announced that a second public call on biomethane would be launched in July, which suggests that the lack of a more structured and specific regulatory framework was also a perceived aspect that contributed to the failure of Public Call 01/2015. In sum, this case illustrates some perceived regulatory, technological and economic barriers on biomethane that were not overcome by ANP Resolution 08/2015. Indeed, SULGAS representative mentioned lack of

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<sup>13</sup> SULGAS launched a Public Call for proposals to provide biomethane for 20 years up to the limit of 200 thousand m<sup>3</sup> per day. After postponing its original deadline, Public Call n. 001/2015 received only one proposal from another state owned company (Companhia Riograndense de Saneamento - CORSAN), which was declassified on later stage due to technical reasons: 1) CORSAN's proposal indicated the utilization of biomass derived from urban waste which is not in the scope of ANP Resolution 08/15; 2) the proposal did not specify the production process and purification of biomethane, nor its delivery conditions; 3) the proposal did not technically demonstrate a minimum daily production of 5 thousand m<sup>3</sup>, nor an implementation within 24 months. In November 2015, SULGAS officially declared that Public Call n. 001/2015 on biomethane "had failed"

information regarding biogas market and absence of national technologies as possible factors that would explain the default of competitors for Public Call 01/2015, also stressing that SULGAS' initiatives and Public Call 01/15 fostered State Law n. 14.864/16 on biomethane. ABBM and ABIOGAS interviewees emphasized that the price offered by SULGAS in the bid was unattractive hence the failure.

Another important aspect is the fact that Rio Grande do Sul Law on biomethane passed without further discussions with Biogas associations who were not aware of the legislation by the time of the interviews (one representative mentioned that such a regulation appears to be a "SULGAS law"). More importantly, considering the constitutional competencies established in the 1988 Constitution, it is arguable whether the states have power to establish a biomethane policy. According to a representative of the Ministry of Mines and Energy, it is even questionable whether states have competence to legislate on biomethane's distribution. Indeed, the Constitution expressly mentions that states have competence towards piped gas, whereas biogas and biomethane are currently classified as biofuel in Brazil.<sup>14</sup> Thus, according to the present classification, states do not have constitutional power to legislate on biomethane distribution. ANP experts also mentioned this current classification as a regulatory obstacle since biofuels are liquids. Therefore many norms applied to biofuels cannot be replicated to biogas or biomethane owing to its technical features. At the same time, Biogas Associations' representatives pointed out that natural gas regulation does not squarely fit biogas and biomethane applications since the products derive from different origins and lead to opposing environmental consequences, a peculiarity that is not considered in the present regulation.

Draft Bill 6559/13 presented before the Federal House of Representatives is a more general document and does not address all the aforementioned concerns<sup>15</sup> hence the need for in-depth discussions and debates with all key stakeholders (state and non-state). The non-existence of a specific and coherent regulatory system for biogas and biomethane as well as the lack of a

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<sup>14</sup> This is a crucial aspect as it defines mandates and has policy consequences on the federal and state levels. During interviews with biogas associations representatives it became clear that they are reluctant in classifying biogas as a by-product or waste even though this is the viewpoint of interviewees from governmental institutions such as COPEL, MMA, and MCTI. Abiogas and ABBM representatives favor an approach that considers biogas as a new product. Thus, this aspect requires further debate with main stakeholders.

<sup>15</sup> The consultant interviewed the chief advisor of the deputy responsible for the draft bill. Unfortunately, the advisor was not aware of the proposed legislation and, until now, it was not possible to set up an appointment with deputy Pedro Uczai.

coordinating federal authority can lead to conflicting situations and generate uncertainty for the market.

### **II.1.3. RECOMMENDATIONS AND BRIDGING ACTIVITIES**

The aforementioned observations indicate an urgent need for 1) an inter-ministerial central federal entity with clear mandate, organizational set up, roles and responsibilities to coordinate integrated and interdisciplinary debate on biogas and biomethane; and 2) specific federal guidelines that adequately consider the peculiarities involving the product and the sector.

The **2016 PROBIOGAS report** on market barriers recommended the **creation of an inter-ministerial committee to coordinate actions towards a national policy on biogas.**<sup>16</sup> Such a suggestion was well received during interviews and some stakeholders mentioned the institutional experience on biofuel policy as a possible lesson that can be followed by biogas.

In the biofuel case, the **Minister of Agriculture and Livestock had an essential role in stressing the importance of this new fuel to Brazil.** In 2003, 2 (two) inter-ministerial groups were created:

**1) A technical inter-ministerial group headed by the Ministry of Mines and Energy with sub-committees on (i) legislation; (ii) tax & incentives; (iii) market development; and (iv) science & technology** that held weekly meetings and generated reports, guidelines and resolutions. The technical inter-ministerial group also supported the launch of the National Biodiesel Production Programme; and

**2) An executive inter-ministerial group<sup>17</sup> headed by the Chief of Staff Office<sup>18</sup> and comprised by**

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<sup>16</sup> To this regard, GIZ made an attempt in creating a managing committee for PROBIOGAS project. The committee was headed by the Ministry of Cities and comprised representatives from the Ministry of Agriculture, Ministry of Mines and Energy, Ministry of Environment; Ministry of Trade and Ministry of Science and Technology. The initial idea was that this PROBIOGAS committee would evolve into an inter-ministerial working group, which did not occur. A representative from the Ministry of Mines mentioned during interview that the Brazilian governmental participants of PROBIOGAS managing committee had a restrictive role since the guidelines and actions were determined by GIZ. This, according to the interviewee, might have hampered the development of an inter-ministerial group.

<sup>17</sup> [http://www.planalto.gov.br/ccivil\\_03/dnn/2003/Dnn10093.htm](http://www.planalto.gov.br/ccivil_03/dnn/2003/Dnn10093.htm) (20 July 2016)

<sup>18</sup> The Chief of Staff Office is directly linked to the Presidency of the Republic and is considered the second highest office within the Brazilian executive branch. Its attributions include assisting the President as well as negotiations with Congress and State Governors.

**governmental decision makers** who operationalized the launch of presidential decrees and provisional measures that were converted in laws on a later stage.

In this context, the GEF Project may consider the following **bridging activities**:

- **Engage the formalization of a technical inter-ministerial working group with a clear mandate and central role in discussing a national programme on biogas and biomethane** (secondary norm) which will set up federal guidelines for a specific regulatory framework<sup>19</sup>, revise the current biogas classification, define funding mechanisms (ex: specific financing lines; soft loans), incentives (ex: feed- in-tariffs, tax holidays, tax credits or tax exemptions) and support technological base. The details of the proposed specific policy can be thoroughly discussed with national consultants during the project implementation. Nevertheless, PROBIOGAS and ABiogas contributions provide a basis for further debates. **Ideally**, since there will be inter and multidisciplinary discussions, **the inter-ministerial working group should be headed by the Chief of Staff Office which is a more neutral institution and thus can foster cooperation across different Ministries. A second best choice would be the Ministry of Mines and Energy or Ministry of Agriculture. Both are strong Ministries in the institutional executive structure and comprise relevant institutional competencies towards biogas and biomethane applications. It is important to mention, however, that during the interview phase ABiogas and MAPA's representatives stressed that MME would have a crucial role for biogas development in Brazil. Further, MAPA's interviewee does not regard MAPA as a central institution on the issue.**<sup>20</sup> **Firstly, because the vast majority of biogas in Brazil is derived from urban waste. Secondly, the main aspects required by Brazilian agro-industries when it comes to biogas (i.e. direct energy sale, tax exemptions, and no collateral) fall within the scope of MME, MF and MIDIC. Finally, taking into account the historical role of ITAIPU in the Brazilian energy sector, it can act as an important facilitator before the Minister of Mines. The contact with the Ministers is needed to stress the importance of biogas and biomethane as well as the urge in creating such central**

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<sup>19</sup> Even though there is also a lack of a central institution with clear mandate and specific biogas policy on the state level (PARANA), I believe that meaningful results for the sector require actions on the federal level, particularly because it is questionable whether states have constitutional power to legislate on biogas and biomethane considering that they are currently classified as biofuels. State level actions may focus on VAT holidays/exemption and environmental licensing for biogas projects.

<sup>20</sup> This assertion, however, appears to contradict the results achieved by MAPA through the low carbon pig farming project where the Ministry obtained a 40% increase in contracts related to animal wastes under ABC Plan (from 28 to 39 contracts)

inter-ministerial working group that will align existing complementary regulation and lead coordination among different governmental bodies towards a specific policy on biogas.<sup>21</sup>

- **Organize participatory consultative workshops with biogas associations, technical/academic institutions, national consultants and the inter-ministerial working group to promote better dialogue between state and non-state organizations** towards the creation of a national strategy by the inter-ministerial working group as well as creation of secondary norms on biogas and biomethane, and improvement of existing complementary norms (ex: ANEEL Resolution 482/12).

#### II.1.4. INPUTS

Contracts with local experts, international consultant, expenses with workshops material, travel cost and other miscellaneous expenses related to the workshops.

The following table synthesizes this section:

STRENGTHS	WEAKNESSES	RECOMMENDATIONS	BRIDGING ACTIVITIES	INPUTS
S.1 -Institutional Infrastructure on complementary norms is already in place, which facilitates synergies and provides a ready platform	W.1 - Absence of an inter-ministerial institution with a clear and specific mandate on biogas and biomethane on the federal level	R.1- Establish an inter-ministerial federal entity with clear mandate, organizational set up, roles and responsibilities to coordinate integrated and interdisciplinary	B.A.1- Engage the formalization of a technical inter-ministerial working group with a clear mandate and central role in discussing a national	I.1- Contracts with local experts, international consultant, expenses with workshops material, travel costs and other miscellaneous expenses related to

<sup>21</sup> During the interviews, I was informed that ABIOGAS will present the proposal of the National Plan on Biogas to the Minister of Mines and Energy in July. This meeting will be helpful in reinforcing the creation of the inter-ministerial working group.

<p>S.2 - Existence of extensive complementary norms and policies (i.e. renewable energy, non-renewable energy, agriculture and environmental)</p> <p>S.3- Important specific regulation is being implemented (ex: ANP Resolution 08/2015; Rio Grande do Sul policy on Biomethane)</p>	<p>W.2- Lack of a specific national strategy and policy on biogas and biomethane (discussion on states constitutional competency to legislate on biogas and biomethane considering the current biogas' classification as biofuel)</p>	<p>debate on biogas and biomethane.</p> <p>R.2- Establish specific federal guidelines that adequately consider the peculiarities involving the product and the sector. The national programme will (i) set up federal guidelines for a specific regulatory framework; (ii) define funding mechanisms; and (iii) support technological base. The details of the proposed specific policy can be thoroughly discussed with national consultants during the project implementation.</p>	<p>programme on biogas and biomethane.</p> <p>B.A.2- Organize participatory consultative workshops with biogas associations, national consultants, technical, academic institutes, biogas industry and the inter-ministerial working group to promote better dialogue towards the creation of a national strategy on biogas and biomethane as well as secondary norms.</p>	<p>the workshops</p>
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## II.2. COMPLEMENTARY POLICY (RENEWABLE ENERGY, ENERGY, AGRICULTURAL AND ENVIRONMENTAL)

### II.2.1 STRENGTHS

There is a significant number of indirect and complementary legislation and policies that apply to biogas and biomethane in the Brazilian agro-industry. **This extensive legal framework and policy regime cutting across sectors provide a ready platform from which a biogas policy can build.** This is often the case with the Brazilian Renewable Energy Incentive Programme; National Energy Policy;

Low Carbon Agricultural Plan; Social Fuel Seal Scheme; National Family Farming Plan; National Policy on Solid Wastes; ANEEL Resolution 482/2012; Parana's Programme on Renewable Energy; Parana's Low Carbon Agriculture and Bioenergy Policy that were examined in the First Report.

**Data availability on those policies is high and an institutional Infrastructure is already in place<sup>22</sup>** both at the federal and state (Parana) levels, which facilitates synergies towards biogas and biomethane applications.

### II.2.2. WEAKNESSES

In the **survey** conducted by **PROBIOGAS** with 38 biogas companies and institutions in Brazil, **difficult access to legal information was one of the identified barriers that increased biogas project's costs and timing for analysis/approval. Throughout the First Report became clear that available information on complementary norms is dispersed, non-systematized and, in some cases, outdated and incomplete**, which hinders access and the implementation of such a diffuse regulatory framework on biogas facilities both at the federal and state (Parana) levels.

**This barrier was also mentioned during interviews. Specifically, the Ministry of Agriculture & Livestock (MAPA) representative mentioned a R\$ 400 thousand project developed from 2015 to 2016, in collaboration with the Inter-American Institute for Cooperation on Agriculture (IICA), focused on gathering, organizing and disseminating existing information on low carbon pig farming (regulatory, financing lines, technologies, benefits and economic advantages).** This one-year project systematized available data in a guidebook and spread information through 51 newsletters and 7 workshops/forum, which also contemplated technology showcases. According to MAPA, from March 2015 to March 2016, there was a 40% increase in contracts related to animal wastes under ABC Plan (from 28 to 39 contracts), compared to a decrease in contracts related to (a) recovery of degraded

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<sup>22</sup> Maybe PROBIOGAS managing committee could fulfill the role of bringing together different interests and promoting the regulatory framework since its initial idea was to evolve towards an inter-ministerial commission. Other possibility would be the ABC Plan working group. The point, however, is that this group only encompasses representatives from MAPA and EMBRAPA. Other ministries and institutions would also need to be on board which might be difficult.

pastures; (b) no-till planting; (c) use of biological nitrogen fixation technique; and (d) crop-livestock-forestry integration. This increase suggests that difficult access to disperse information is one existing barrier and MAPA's initiative can be continued and expanded for more significant results. For example, MAPA's project did not systematize legislation and regulation on biogas; it did not provide detailed information on existing biogas commercial opportunities and arrangements as well as successful cases in Brazil for benchmarking, aspects that were indicated as perceived barriers by stakeholders in PROBIOGAS report.

Another aspect pointed out by some interviewees is the fact that ANEEL Resolution 482/12 has a limited net metering and does not allow direct sales. Therefore, the norm could be improved to favour small producers and better promote biogas market. This will require specific legislation related to the Electrical Energy Chamber of Trading (CCEE) or a specific trading chamber for biogas projects allowing small producers to directly sell exceeding energy to consumers.

### II.2.3. RECOMMENDATIONS AND SUGGESTED BRIDGING ACTIVITIES

In view of the above, it is advisable to systematize and consolidate complementary regulation on biogas and biomethane in a central and an easy-to-access database (Federal and Parana) that will be regularly updated.<sup>23</sup> The kind of database and its maintenance can be further discussed during the project implementation with counterparts.<sup>24</sup> The implemented solution will serve for a longer period and should allow an immediate overview of key regulatory and legal data in a concentrated form, facilitating access to complementary norms. The output can also include a practical guidebook to ease interpretation and in-depth assessment of relevant regulation and commercial opportunities/arrangements as well as workshops to publicize the initiative and disseminate the

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<sup>23</sup> MAPA's project did not organize nor systematize legislation and regulation, which is why it was included as a possible bridging activity for GEF from a regulatory perspective. Another aspect that can be added would be detailed information on existing biogas commercial opportunities and arrangements as well as successful cases in Brazil for benchmarking. This was something indicated in PROBIOGAS report whereas MAPA's project only included economic evaluation on the various low carbon technologies related to wastes derived from pig farming.

<sup>24</sup> At the federal level could be MAPA. They already have a general database related to the low carbon pig farming project, which can be enhanced with regulatory and market information.



material. Finally, improvement of existing key complementary regulation such as ANEEL Resolution 482/12 may be operationalized through dialogues and workshops with relevant policy-makers.

Regarding this, the GEF Project may consider the following **bridging activities**:

- **Inventory, organization and updating of existing complementary regulation and legal data (Federal and Parana)**, taking into account synergies with biogas and biomethane applications. The inventory could encompass commercial opportunities and arrangements as well as benchmarking cases.
- **Set up a regulatory database** on the federal and Parana's level.
- **Produce a practical Guidebook**, including complete information on existing complementary regulation, highlighting its connection with biogas/biomethane projects and how it can be applied to such projects. The guide may also encompass detailed information on existing biogas commercial opportunities and arrangements as well as successful cases in Brazil for benchmarking. It could be a practical guide covering main aspects of the project cycle for implementing biogas plants in the Brazilian agro-industry sector.
- **Organize a series of workshops to publicize the initiative, disseminate information, and present the Guidebook on the Federal and Parana's level.**
- **Organize dialogue sessions and workshops with biogas associations, biogas industry, academic /technological institutes, national experts and relevant ANEEL policy makers** aiming at improving ANEEL's Resolution 482/15.

#### II.2.4. INPUTS

National contracts; expenses with visual and printing materials; travel costs; and miscellaneous expenses related to the workshops.

In sum:

STRENGTHS	WEAKNESSES	RECCOMENDATIONS	BRIDGING ACTIVITIES	INPUTS
S.1 Data availability on complementary regulation and legislation is high	<p>W.1- Difficult access to relevant regulatory information.</p> <p>W.2- Regulatory Information is dispersed and non-systematized.</p> <p>W.3 - Some available information is outdated.</p> <p>W.4 – Some complementary norms can be improved to foster biogas projects (ex: ANEEL Resolution 482/12)</p>	<p>R.1- An up-to-date and easy-to-access regulatory database should be prepared and maintained on the federal and Parana levels.</p> <p>R.2 – Preparation of a Guideline to ease interpretation and promote in-depth assessment of relevant complementary regulation and commercial opportunities/arrangements.</p> <p>R.3- Publicize initiative and disseminate information.</p> <p>R.4 – Improve key complementary norms (i.e. ANEEL Resolution 482/12)</p>	<p>B.A.1- Inventory, organization, and up dating of existing regulatory and legal data (Federal and Parana). The inventory could also encompass commercial opportunities and arrangements as well as benchmarking cases</p> <p>B.A.2 – Set up a regulatory database (Federal and Parana)</p> <p>B.A.3- Produce a practical Guidebook (Federal and Parana)</p> <p>B.A.4- Organize a series of workshops to publicize the initiative, disseminate information and present the Guidebook on the Federal and Parana’s level.</p>	I.1- National contracts; expenses with visual and printing materials; travel costs; and miscellaneous expenses related to the workshops

			B.A.5 – Organize dialogue sessions and workshops with biogas associations, biogas industry, academic/ technological institutes, national experts and key ANEEL policy makers, aiming at improving ANEEL's Resolution 482/12.	
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### II.3. FINANCING LINES AND INCENTIVES

#### II.3.1 STRENGTHS

There are a number of financing lines from BNDS, Bank of Brazil and BRDE that can be applied to biogas and biomethane projects. Particularly, it is worth stressing the ABC Programme (ABC waste treatment line), Inovagro, Climate Fund and Finep Innovation, which were examined in the first report. Those lines have competitive interest rates, funding and grace periods when compared to private banks.

#### II.3.2. WEAKNESSES

Nevertheless, **it became clear during the interview phase that biogas and biomethane producers have difficulties in accessing available financing lines.** This is reinforced by PROBIOGAS 2016 report on market barriers, ABC Observatory study<sup>25</sup> and MAPA's Low Carbon Pig Farming project, which indicated that in the 2013/14 and 2015/16 crop years the **distribution of funding according to financing lines within the Low Carbon Agriculture Plan was mainly concentrated in recovery of**

<sup>25</sup> <http://mediadrawer.gov.br/abc/original/report-1year-2-abc-plan.pdf> (20 May 2016)

degraded pastures, whereas only 0.3% referred to animal waste treatment (mostly, biogas projects according to MAPA's representative). Similarly, interviewees from the Climate Fund (Ministry of Environment) informed that there are very few projects involving biogas under the fund. They mentioned that BNDS – which operates refundable resources - prefers large projects whereas it is difficult to access non-refundable resources administered by the Ministry of Environment due to the formal and highly competitive bids as well as the fact that the projects must involve federal, state, municipal institutions or NGOs as executing parts.<sup>26</sup> From 2011 to 2014, BNDS financed only 5 projects, totalling R\$ 108.9 million, under the Climate Fund Programme, none of which referred to biogas applications.<sup>27</sup> In the same period, the Ministry of Environment financed 189 projects, totalling R\$ 94.8 million, from which- according to the interviewees – 3 projects referred to biogas produced from urban and livestock wastes.<sup>28</sup>

While most of the interviewees from governmental institutions referred to factors such as (i) lack of information; (ii) competitive bids; and (iii) bureaucracy as possible barriers related to existing financing lines; stakeholders from biogas associations indicated that the guarantees demanded by public banks, specifically collateral (*in rem* guarantee), are a major obstacle for small and medium-scale farmers in getting access to financing lines for biogas and biomethane projects. This particular barrier was reinforced in the survey conducted by PROBIOGAS with biogas companies and institutions in Brazil. Thus, the findings suggest that the existing financing lines do not adequately address the peculiarities pertaining biogas projects.

Another point raised during interviews relates to the lack of a fiscal policy to provide incentive mechanisms, particularly tax incentives and other specifically designed incentive schemes towards biogas and biomethane applications. According to a biogas association interviewee, taxes on manufactured products (IPI); import tax (II); social integration system and social levy social contribution on revenues (PIS/CONFINS); and VAT sales (ICMS) comprise the bulk (approximately

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<sup>26</sup> Associations and Trade Unions are not allowed to be executing parts.

<sup>27</sup>[http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes\\_pt/Galerias/Arquivos/empresa/fundos/FNMC/FNMC\\_relatorio\\_fundo\\_clima\\_2014.pdf](http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_pt/Galerias/Arquivos/empresa/fundos/FNMC/FNMC_relatorio_fundo_clima_2014.pdf) (20 June 2016). The line is currently suspended for new projects.

<sup>28</sup> The interviewees did not have information on the sizes, type of biogas or substrate". The 2014 report on climate fund does not quantify the approved biogas projects, only making a general reference to "projects and studies for energy generation from biogas produced from urban wastes and livestock as well as solar energy", totalling R\$ 2.1 million (i.e. an average of R\$ 700 thousand per project) [http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes\\_pt/Galerias/Arquivos/empresa/fundos/FNMC/FNMC\\_relatorio\\_fundo\\_clima\\_2014.pdf](http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_pt/Galerias/Arquivos/empresa/fundos/FNMC/FNMC_relatorio_fundo_clima_2014.pdf) (20 June 2016).

50%) of biogas and biomethane projects costs, which also restricts the implementation of such plants in the agro-industry.

### II.3.3. RECOMMENDATIONS AND SUGGESTED BRIDGING ACTIVITIES

Based on the findings of the First Report and interview phase, it is recommended the design of a specific biogas and biomethane loan that targets small and medium-sized rural farmers. To this regard, the ABC waste treatment financing line can be enhanced to incorporate suggestions from biogas associations such as project finance, which does not require collateral. By doing this, the GEF Project can build on recent work done by MAPA with the Low Carbon Pig Farming initiative that aimed to increase the number of projects financed by the ABC waste treatment line through information dissemination.<sup>29</sup> Therefore, the improvement of an existing line on low carbon agriculture may achieve short-term results. The development of a specific financing scheme can also be discussed as a tool within a national policy for biogas and biomethane (see section II.1). Finally, tax holidays for biogas and biomethane projects should be implemented on the federal (IPI, II, PIS/COFINS) and state level (ICMS) as a means to strength and widening the market in Brazil. With this regard, even though there is a strong national policy component towards IPI, II, PIS/COFINS which would require in-depth discussions with MIDIC and MF in a stage where biogas market is underdeveloped, this is not the case with VAT sales. So much so, that some states such as Sao Paulo and Pernambuco have adopted incentives such as VAT deferring. The State of Parana also has some VAT incentives regarding parts, components and tools used in renewable energy generation. Thus, the project could focus on improving this incentive as to better promote biogas development in Parana.

Suggested **bridging activities** include:

- **Capacity building** for public financial institutions (BNDS, Bank of Brazil and BRDE). A series of trainings on evaluation of biogas and biomethane projects in the agro-industry and peculiarities of such projects to key staff from BNDS, Bank of Brazil and BRDE. This activity may be carried out in partnership with SENAR and SENAI.

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<sup>29</sup> During the interview, MAPA's representative informed that they plan to continue this project from 2016 to 2017 with livestock.

- **Engage the formalization of a technical working group within MAPA to enhance the ABC waste treatment line to consider peculiarities involving biogas and biomethane projects. Organize workshops** to promote better dialogue among biogas associations industry, national experts and governmental officials.
- **Engage the formalization of a technical working group at the Parana level to study the implementation of VAT holidays** for biogas and biomethane projects. **Organize workshops** to promote better dialogue among biogas associations, industry, national experts and governmental officials. OBS: federal tax discussions (IPI, II, PIS/COFINS) and other incentive mechanisms (ex: fed-in tariffs, subsidies, specific loan) can be included in the scope of the inter-ministerial working group (section I.1.3)

#### II.3.4. INPUTS

National contracts for financial and tax aspects, travel costs, and miscellaneous expenses related to trainings and workshops.

This section is summarized in the following table:

STRENGTHS	WEAKNESSES	RECOMMENDATIONS	BRIDGING ACTIVITIES	INPUTS
S.1- Existence of financial lines from BNDS, Bank of Brazil, BRDE with competitive interest rates, funding and grace periods	W.1. – Difficult access to existing financial lines which do not take into account peculiarities concerning biogas and biomethane projects.	R.1- Improve ABC waste treatment financing line to incorporate suggestions from biogas associations such as project finance, which does not require collateral.  R.2 - Adoption of adequate financial mechanisms and	B.A.1- Capacity building: organize a series of trainings on evaluation of biogas and biomethane projects in the agro-industry and peculiarities of such projects to key staff from BNDS, Bank of Brazil and BRDE. Partnerships with SENAI and SENAR	I.1- National contracts; travel costs; and miscellaneous expenses related to the trainings and workshops

when compared to private banks.	W.2- lack of a fiscal policy to provide incentive mechanisms, particularly tax incentives and other specifically designed incentive schemes towards biogas and biomethane applications	incentives to enable small and medium-scale rural farmers to derive maximum benefit (ex: tax holidays at the Parana (VAT) and Federal levels (IPI, II, PIS/COFINS); or other incentives).	might be explored.  B.A.2 - Engage the formalization of a technical working group within MAPA to enhance the ABC waste treatment line. Organize workshops to promote better dialogue among biogas associations industry, national experts and governmental officials  B.A.3- Engage the formalization of a technical working group at the Parana level to study the implementation of VAT holidays for biogas and biomethane projects. Organize workshops to promote better dialogue among biogas associations, industry, national experts and governmental officials	
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### III. CONCLUDING REMARKS

The main findings of this analysis draw attention to three major areas that need to be addressed: 1) the urge of establishing an inter-ministerial federal entity with clear mandate, organizational set up, roles and responsibilities to develop federal policy guidelines specifically devised for biogas and biomethane applications, including biogas' classification which is a crucial aspect for delineating

**competencies and regulation; 2) inadequacy of regulatory information base since data is not systematized, not organized and, in some cases, outdated making it difficult to access and implement; and 3) limited adequacy of financing lines which do not take into account peculiarities involving biogas and biomethane projects such as its sustainability features and lack of specific financial incentives.**

Thus, despite the progress that has been made by the enactment of ANP Resolution 08/15 and the existence of a wide range of complementary norms on renewable energy, energy, environment and agriculture, much work remains to be done at the policy level to address specific issues on biogas and biomethane. Concrete and inter-ministerial governance to coordinate regulatory approaches as well as better explore synergies with other national policies; specific federal regulation; an updated regulatory database; specific financing lines and incentives are key priorities to spur the development of biogas and biomethane applications in Brazil.



## ANNEX 1

CONTACT	AFFILIATION
Ricardo Borges Gomide	Ministry of Mines and Energy
Lucio Costa Proença	Ministry of Environment
Sidney Medeiros	Ministry of Agriculture & Livestock
Gustavo de Lima Ramos	Ministry of Science, Technology & Innovation
José Carlos Muniz de Brito Filho	ELETROBRAS
Otto Fonseca Cardoso	Rio Grande do Sul Gas Company (SULGAS)
José Roberto Lopes	Parana Energy Company (COPEL)
Cicero Bley	Biogas Association (ABIOGAS)
Mario Coelho	Biogas Association (ABBM)
Luis Cezar Costa Junior	GIZ/PROBIOGAS
Fernando Silva	Climate Fund
Heraldo Peres	Climate Fund
Delio Neel	Climate Fund
Marcela Ganem Flores	National Oil, Gas & Biofuel Agency (ANP)
Alexandre Caldeira	National Oil, Gas & Biofuel Agency (ANP)
Eduardo Barros Neves	National Oil, Gas & Biofuel Agency (ANP)
Pietro Sampaio Mendes	National Oil, Gas & Biofuel Agency (ANP)
Euler Martins Lage	National Oil, Gas & Biofuel Agency (ANP)
Caio Jardim	Federal House of Representatives

## ANNEX 2

### SEMI-STRUCTURED QUESTIONNAIRE

#### Interviews Major Questions

- What impact, if any, does the current biogas/biomethane policy have in terms of outcomes for the agro-industry in Brazil?
- To what extent does the current biogas/biomethane policy adequately meet the needs of Brazilian agro-industry?
- Are there circumstances or reasons why the biogas/biomethane policy is properly working or cannot be applied? Comment on internal and external factors that influenced the policy implementation.
- In case it cannot be applied, what steps can be taken to overcome barriers?
- What stakeholders were involved in designing the policy? How active were they?
- What was the level of collaboration between stakeholders?