http://bioenfapesp.org

FAPESP Bioenergy Research Program
BIOEN:
Science for a Bio-based Society

FAPESP
Biobased Economy Workshop
April, 5 and 6, 2017 - FAPESP Auditorium

FAPESP is the State of São Paulo Research Funding Agency

Annual budget of ~US$ 500 million (1% of all state revenues)

BIOEN Program

Fundamental knowledge and new technologies for a bio-based society

- **Academic Basic and Applied Research** (US$ 40 million)
  Since 2008, 204 research grants, 400 researchers, collaborators from 29 countries
  – Regular, Thematic and Young Investigator Awards
  Open to foreign scientists willing to come to Brazil

- **State of São Paulo Bioenergy Research Center** (US$ 90 million)
  FAPESP, USP, UNICAMP, UNESP, State of São Paulo Government (80 new faculty positions for bioenergy researchers)
  Creation of a PhD Program on Bioenergy

- **Partnerships**
  United States, United Kingdom and The Netherlands, Brazil
  Oak Ridge National Laboratories, UKRC, BBSRC, BE-Basic, GSB, LACAF, BOEING, BP, Braskem, Dedini, ETH, Microsoft, Oxiteno, PSA Peugeot Citroën, Vale

- **Innovation Technology, Joint industry-university research (5 years)**

Company	Subject
Oxiteno	Lignocellulosic materials
Braskem	Alcoholchemistry
Dedini	Processes
ETH	Agricultural practices
Microsoft	Computational development
Vale	Ethanol technologies
Boeing	Aviation Biofuels
BP	Processes and sustainability
PSA	Engines

Argentina	Italy
Australia	Japan
Austria	Kenya
Belgium	Malaysia
Canada	Mauritius
China	Norway
Costa Rica	Portugal
Denmark	South Africa
Finland	Spain
France	Sweden
Germany	Switzerland
Guatemala	Thailand
India	The Netherlands
Israel	UK
	USA

BIOMASS

Contribute with knowledge and technologies for Sugarcane Improvement
Enable a Systems Biology approach for Biofuel Crops

BIOFUEL TECHNOLOGIES

Increasing productivity (amount of ethanol by ton of sugarcane), energy saving, water saving and minimizing environmental impacts

BIOREFINERIES

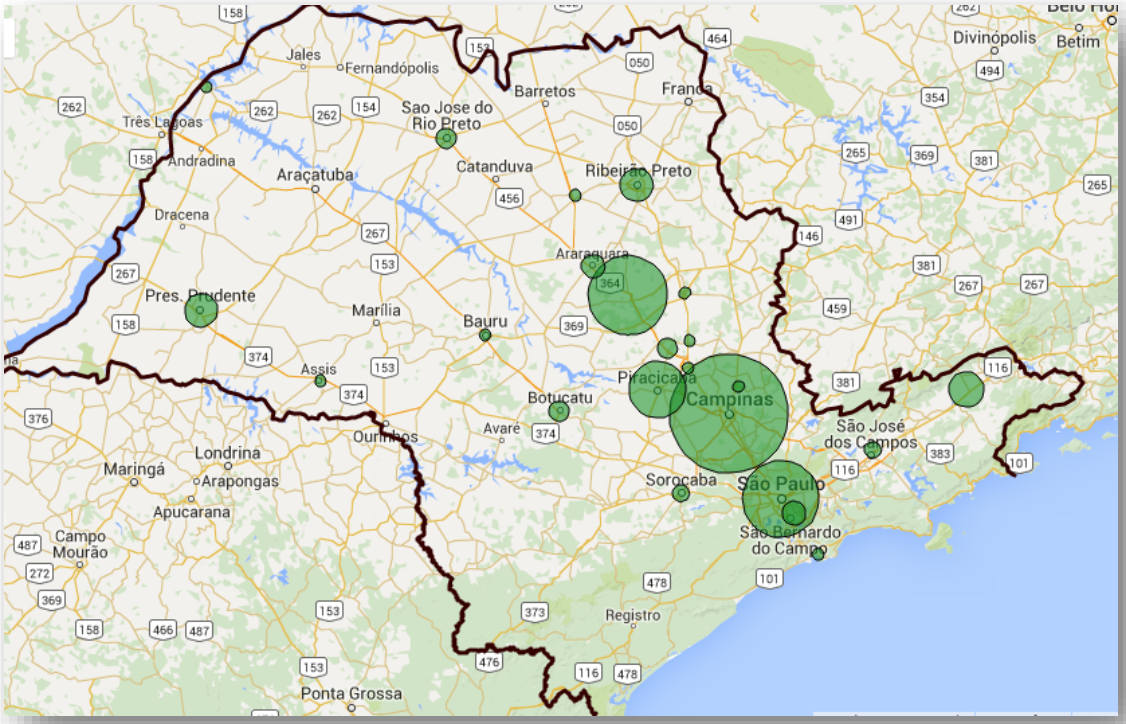
Complete substitution of fossil fuel derived compounds
Sugarchemistry for intermediate chemical production and alcoholchemistry as a petrochemistry substitute

ENGINES

Flex-fuel engines with increased performance, durability and decreased consumption, pollutant emissions

SUSTAINABILITY AND IMPACTS

Studies to consolidate sugarcane ethanol as the leading technology path to ethanol and derivatives production
Horizontal themes: Social and Economic Impacts, Environmental studies and Land Use



City	Research grants	Scholarships
Campinas	64	160
São Paulo	35	81
São Carlos	20	62
Piracicaba	20	44
Presidente Prudente	3	25
Lorena	7	19
Ribeirão Preto	11	12
Rio Claro	2	15
Araraquara	5	10
São José do Rio Preto	7	4
Botucatu	5	4
Sorocaba	4	5
Santo André	6	2
São José dos Campos	3	4
Limeira	1	2
Jaboticabal	3	0
Santos	2	0
Araras	2	0
Assis	1	1
Jaguariúna	1	0
Pirassununga	0	1
Bauru	1	0
Ilha Solteira	1	0

Data available at FAPESP's online database:
http://www.bv.fapesp.br/en/16/bioenergy-research-bioen/

You are viewing the ResearcherID Labs page for **FAPESP, BIOEN (H-6149-2012)**

Collaboration Network

The map graph below displays (up to) the top **500 geographic locations** for this researcher's co-authors. Scroll over the map and place your cursor on a pin to view city, state, and country information. Clicking on the pin will display bibliographic data for the paper that has cited the researcher's publication(s).

Top: Authors | Research Areas | Countries/Territories | Institutions | Map |

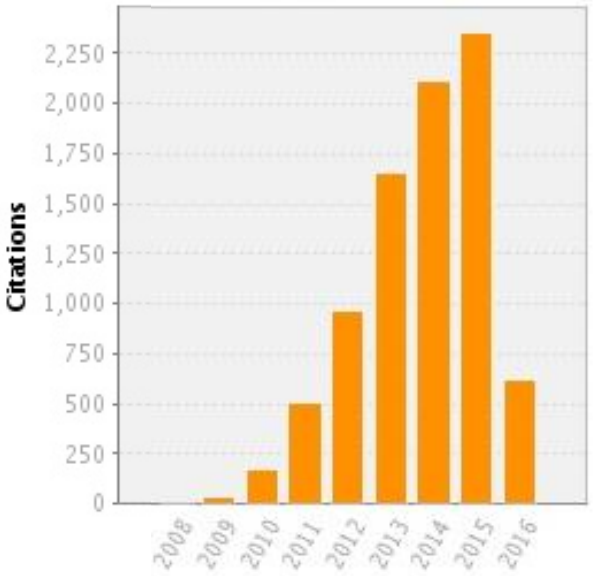
BIOEN production numbers

My Researcher ID

Researcher ID: FAPESP, BIOEN (H-6149-2012)
URL: http://www.researcherid.com/rid/H-6149-2012

RESEARCHERID THOMSON REUTERS

Citation Distribution by year



Total Articles in Publication List:	**927**
Articles With Citation Data:	**863**
Sum of the Times Cited:	**8433**
Average Citations per Article:	**9.77**
h-index:	**38**
Last Updated:	**04/12/2016 16:33 GMT**

BIOEN FACTS AND FIGURES

US$ 167 million	**research expenditures by FAPESP and partners**
13	**co-funding partners**
7	**private companies co-funding projects**
467	**scholarships** – 89 ongoing and 378 completed
206	**research projects** – 66 ongoing and 140 completed
300+	**researchers involved**
21	**fields of knowledge**
920+	**scientific publications**
17	**patents filed**

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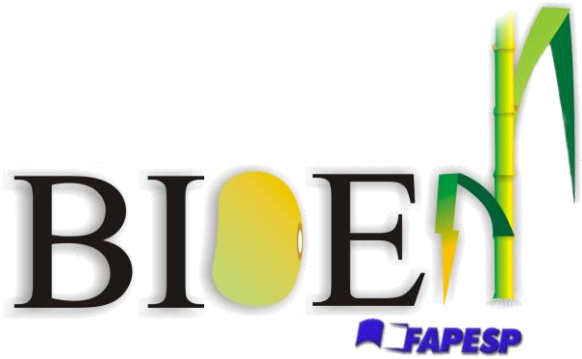

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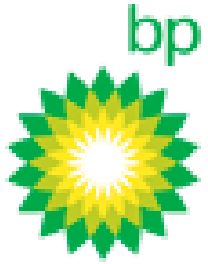
BIOEN Partners



BIOEN – BE-Basic collaboration

Luuk van der Wielen
Patricia Osseweijer

TU Delft

BE-Basic Foundation

- MoU since 2011, extended in 2013 (-2018)
  Joint budget **2-3 MUS$/year**

- Calls in 2012, 2013, 2014, 2016 (now open to 30-4)

- **A total of 11 projects funded**

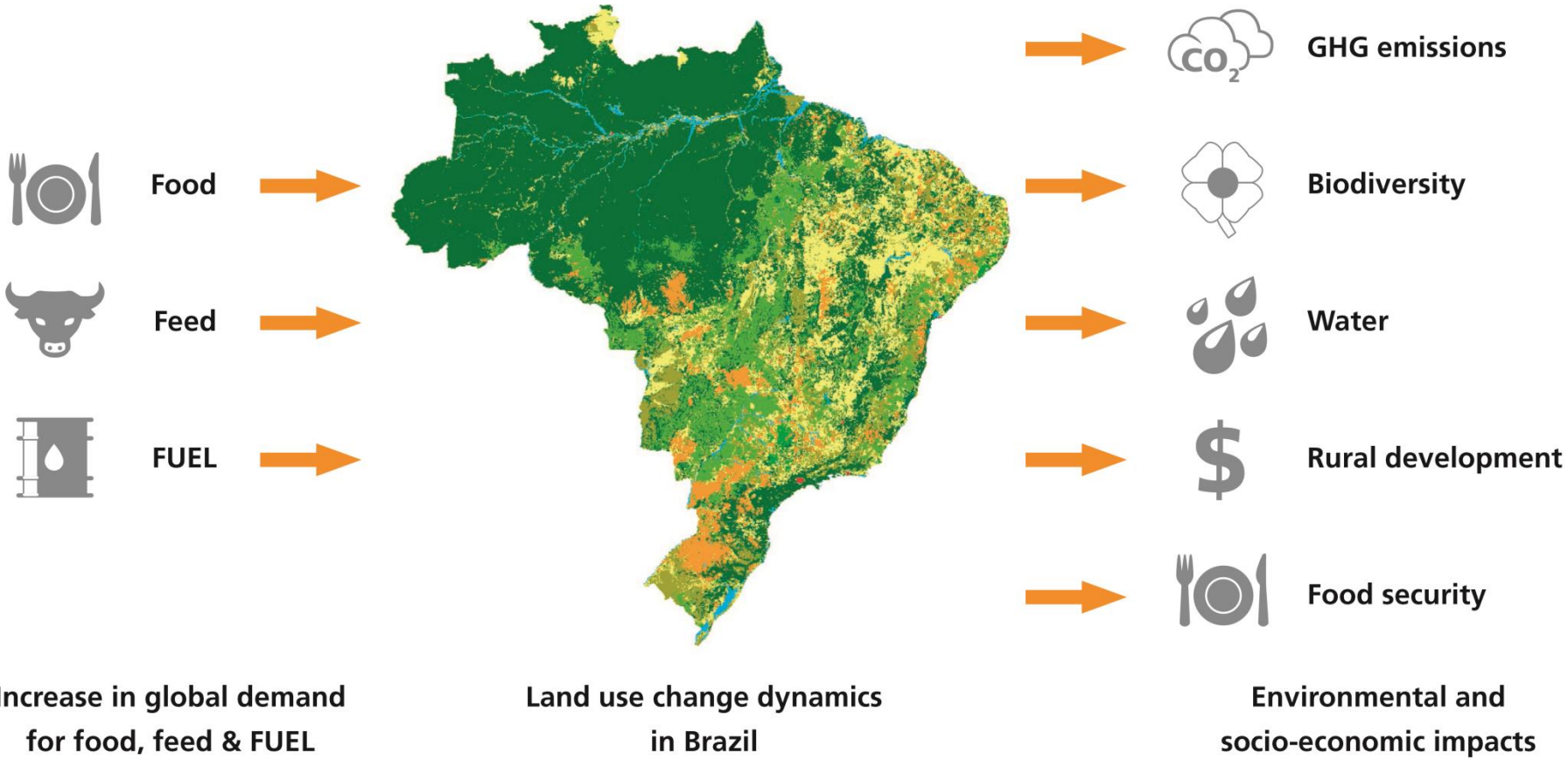
Focus on:
“Sustainable Biorenewables” in wide definition
Including a range of associated ‘clean and sustainable technology’ and supporting areas

Joint Projects with Fapeps funding 2012-2016	partners
BIOEN-BE-Basic (2012-2016: 12 M$)	
Integrated sustainability assessment of bioethanol production from sugarcane	Unicamp, UU (Walter-Faaij)
Emulsion behaviour of fermentation mixtures of jet-like biofuels	Unicamp, TUD (da Cunha-Cuellar)
Functional bio-indicators for soil quality monitoring	USP, NIOO (Tsai-Kuramae)
Integrating partial and general equilibrium models to assess biofuels expansion impacts	ICONE, WUR-LEI (Nassar-van Meijl)
Bio-indicators for sustainable and optimal biofuel production	UNESP, WUR (Talarico Saia-Langenhoff)
Biological production of medium-chain fatty acids from low-grade biomass	USP, WUR (Ferreira da Silva-Steinbusch)
Improved space-based remote sensing for land use mapping	Unicamp, TUD (Lamparelli-Hansen)
Innovation for a biobased economy in Brazil: Challenges and hurdles utilisation of biomass	Unicamp, TUD (da Silveira-Osseweijer)
Applied multispectral reflectance spectroscopy for prediction of soil chemical properties	Unicamp, Soilcares (Magalhaes-Termorshuizen)
Unraveling the sources and sinks of nitrous oxide (N2O) in sustainable biobased agriculture	UFSCAR, NIOO (Kuramae)
Programmable balancing of growth and formation of polyhydroxyalkanoates in Escherichia coli	NWO: UNICAMP, TUD (Gombert-Wahl)

Research projects themes

- Bioethanol expansion impacts
  - Economic modelling
  - Remote sensing tools to assess land use changes
  - Identification of social perceptions of impacts
  - Full integrated impact assessment
- Biobased production & fermentation technologies
- Bio-tools for soil quality monitoring

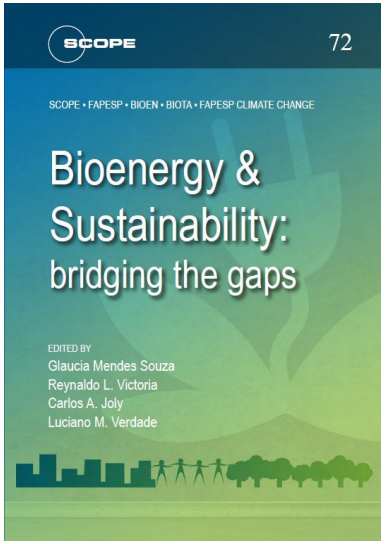
- Novel satellite-based remote sensing methodology to assess land use:
  - Land use and land cover maps available via UL: tinyurl.com/zp2dwm7
  - Stage and productivity updated maps for bio-energy crops
- Integration of economic equilibrium models for biobased economy assessment
- Identification of perceived sustainability impacts in sugar cane expansion areas
- Integrated assessment of land use changes
- Best management practices application of fertilizer and/or vinasse optimizing soil quality and minimize GHG emissions
- **3 prizes for PhD thesis (NIOO-ESALQ)**:
  CAPES Award–Agrarias 2014
  CAPES Honor Award-Agrarias 2015
  2015 International Plant Nutrition Institute (IPNI) Award for
  Latin America for sustainable sugarcane production related PhD thesis


Food
Feed
FUEL
GHG emissions
Biodiversity
Water
Rural development
Food security
Increase in global demand for food, feed & FUEL
Land use change dynamics in Brazil
Environmental and socio-economic impacts

- The project of Kuramae and Tsai work has been awarded with 3 prizes: CAPES Award–Agrarias 2014 for the best PhD thesis; CAPES Honor Award-Agrarias 2015 for PhD thesis 2015; 2015 International Plant Nutrition Institute (IPNI) Award for Latin America for sustainable sugarcane production related PhD thesis.

013, and on http://www.be-basic.org/news-center.html.

NL-BR	Until September 2016
Joint design reports	8
Joint Research projects	13
Joint peer reviewed publications	18
Joint peer reviewed book chapters	10
Dual Degree PhD candidates	10
Dual Degree PhD Thesis	-
Joint courses	11
Joint press releases	26
Joint policy papers	2



» SCOPE Bioenergy & Sustainability report

» MiniRAP follow up UN- SCOPE – November 2016

» ECO-BIO 2016

» BBEST-3 October 2017 with G-BiB BBE Design Competition (BE-Basic, Big-C, Brazil)