

# **SOUTH-NORTH RESEARCH COOPERATION AT UNIVERSITY OF SOUTHERN DENMARK**

## **LIFE CYCLE ASSESSMENT FOR WASTE MANAGEMENT SYSTEMS IN BRAZIL**

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**Priscila de Moraes Lima**  
**PhD Guest**

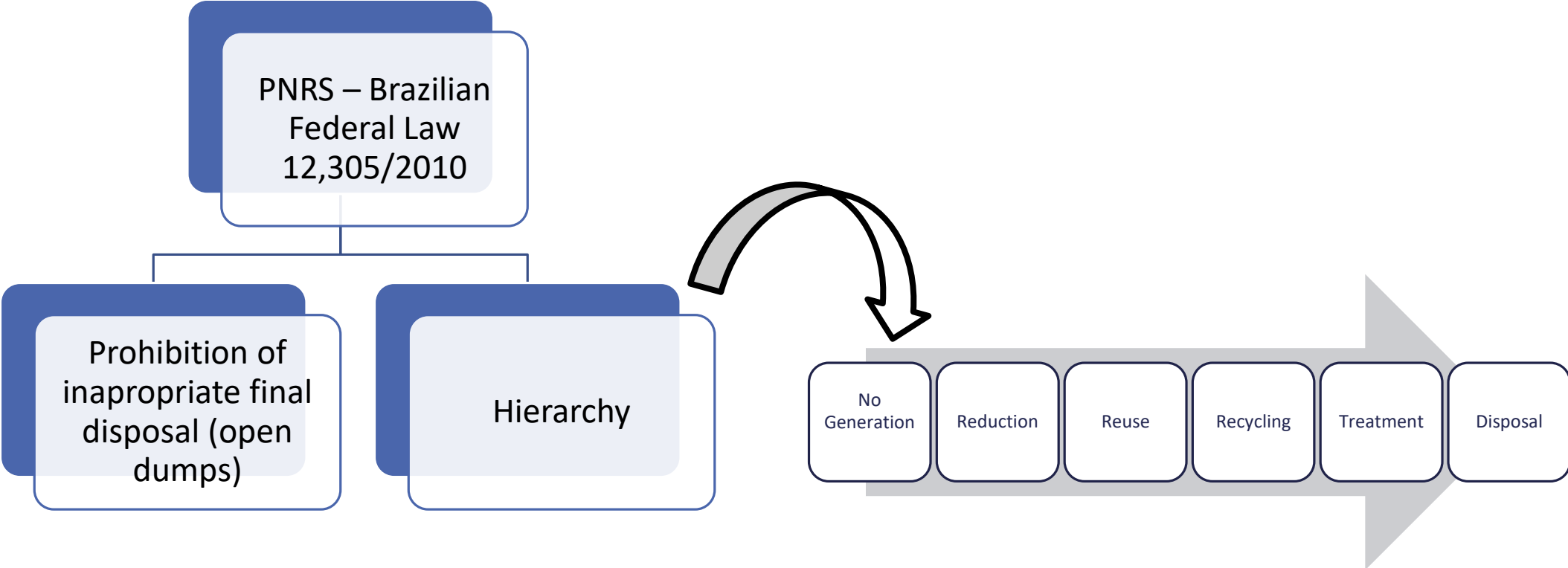
# Personal Background

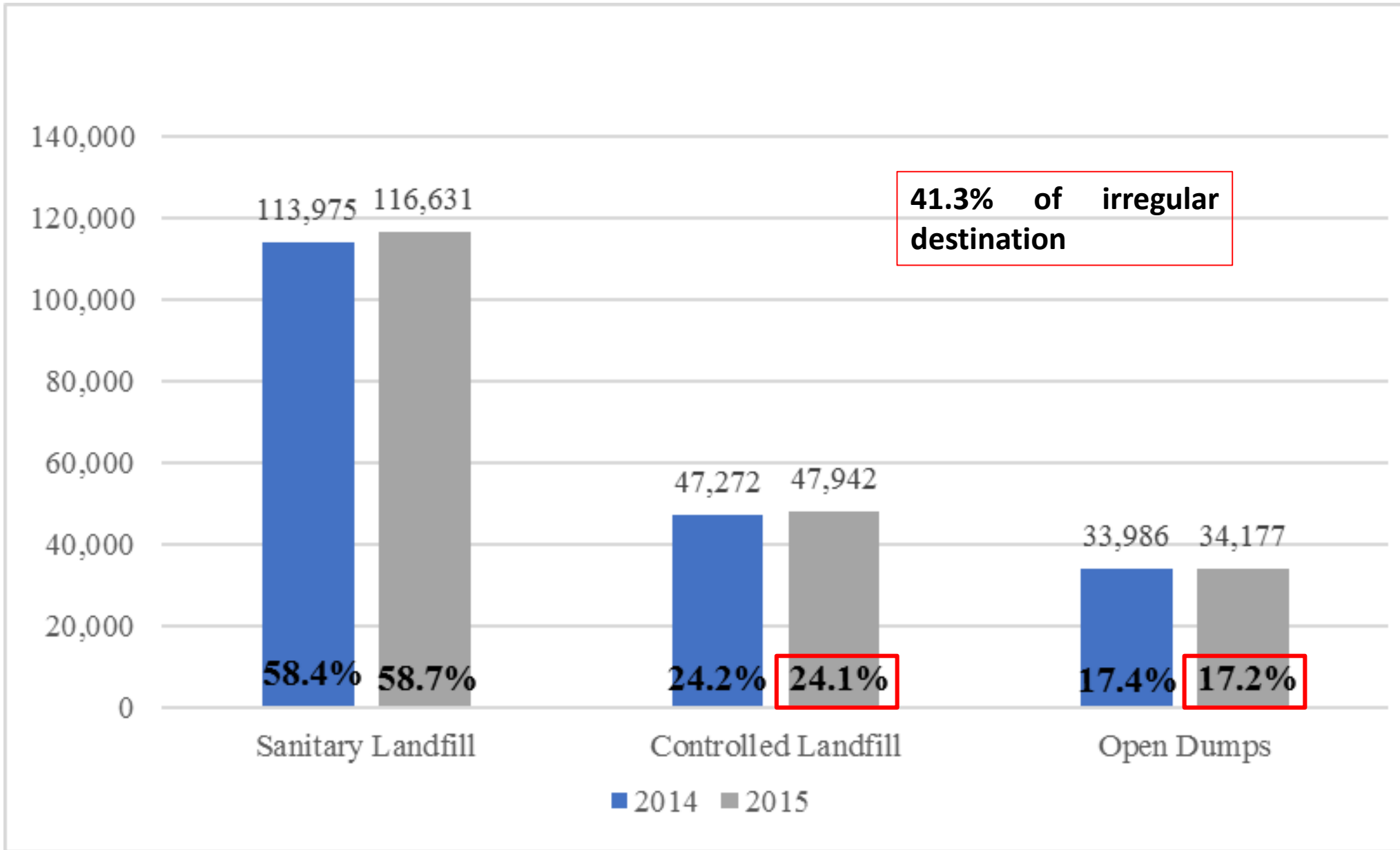
- Bachelor in Sanitary and Environmental Engineering from Universidade Católica de Pernambuco
- Master in Environmental Engineering from the Federal University of Rio de Janeiro
- PhD started in March, 2016 at the University of Copenhagen
- PhD Guest in Denmark from 2016 to 2017



# Research Background

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# Objective

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- To propose sustainable systems for waste management in Brazil, based on the life cycle approach.

# PhD Structure

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4 years PhD being 3 with scholarship

- ✓ 1st year for courses and credits completion
- ✓ Conferences participation
- ✓ Paper published in Waste Management: Environmental Assessment of existing and alternative options for management of municipal solid waste in Brazil.
- ✓ Paper written: Environmental assessment of prospective MSW management in Campo Grande, Brazil, under co-authors revision, to be submitted to Waste Management.

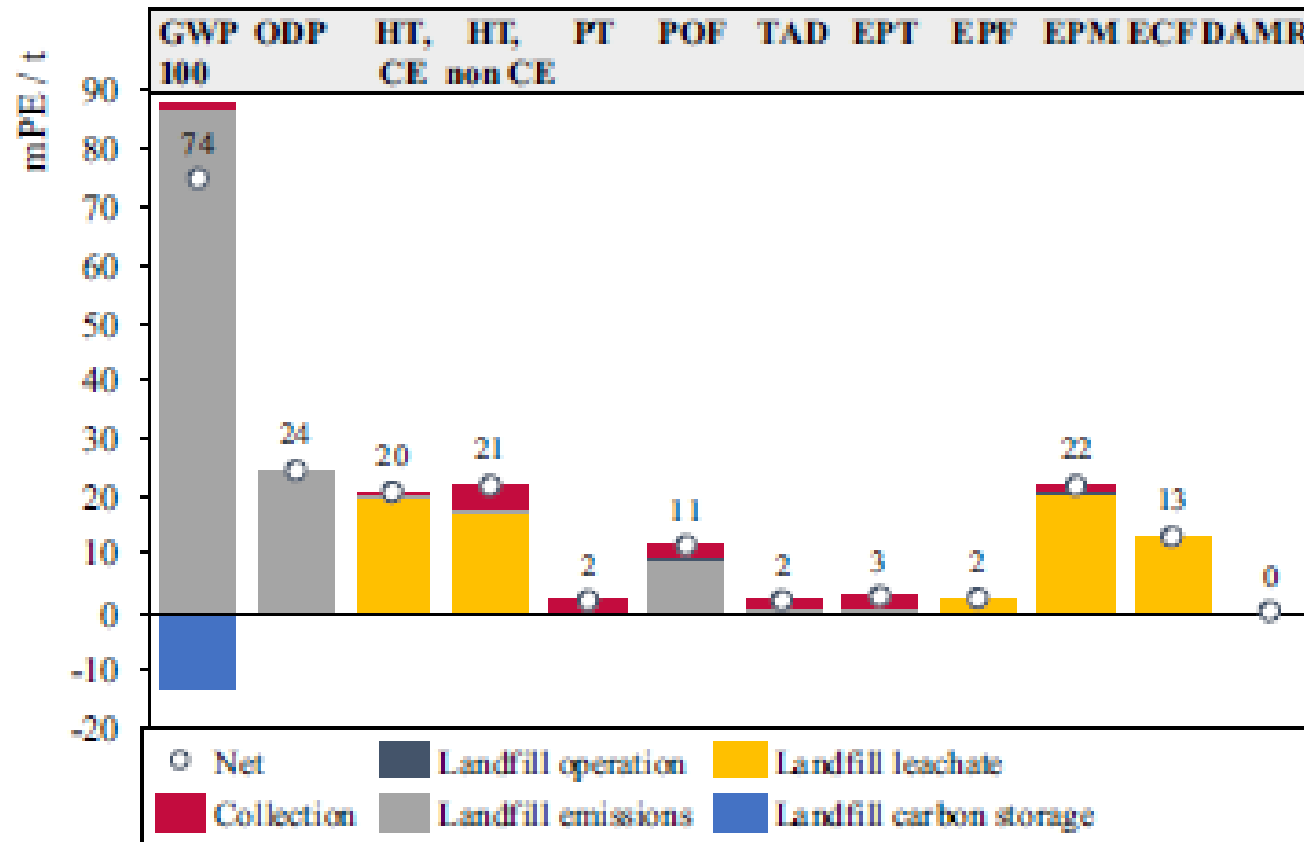
Next: Economic assessment of the alternatives proposed.

# Environmental Assessment of existing and alternative options for management of municipal solid waste in Brazil

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- Generic case study of Brazil
- Comparison between three different sets (categories) of systems
- Overview of the current and alternative technology-centric waste management alternatives
- The results confirmed the high environmental cost of improper disposal
- Combustion WtE does not offer significant benefits over sanitary landfilling, due to limitations in energy utilization
- Biogas upgrading and use as vehicle fuel resulted in bigger savings compared to electricity production
- Mechanical-biological systems had environmental benefits in most impact categories
- MBT systems that include extended capabilities to recover recyclable materials, could also make significant contributions to recycling in Brazil

# Environmental Assessment of existing and alternative options for management of municipal solid waste in Brazil



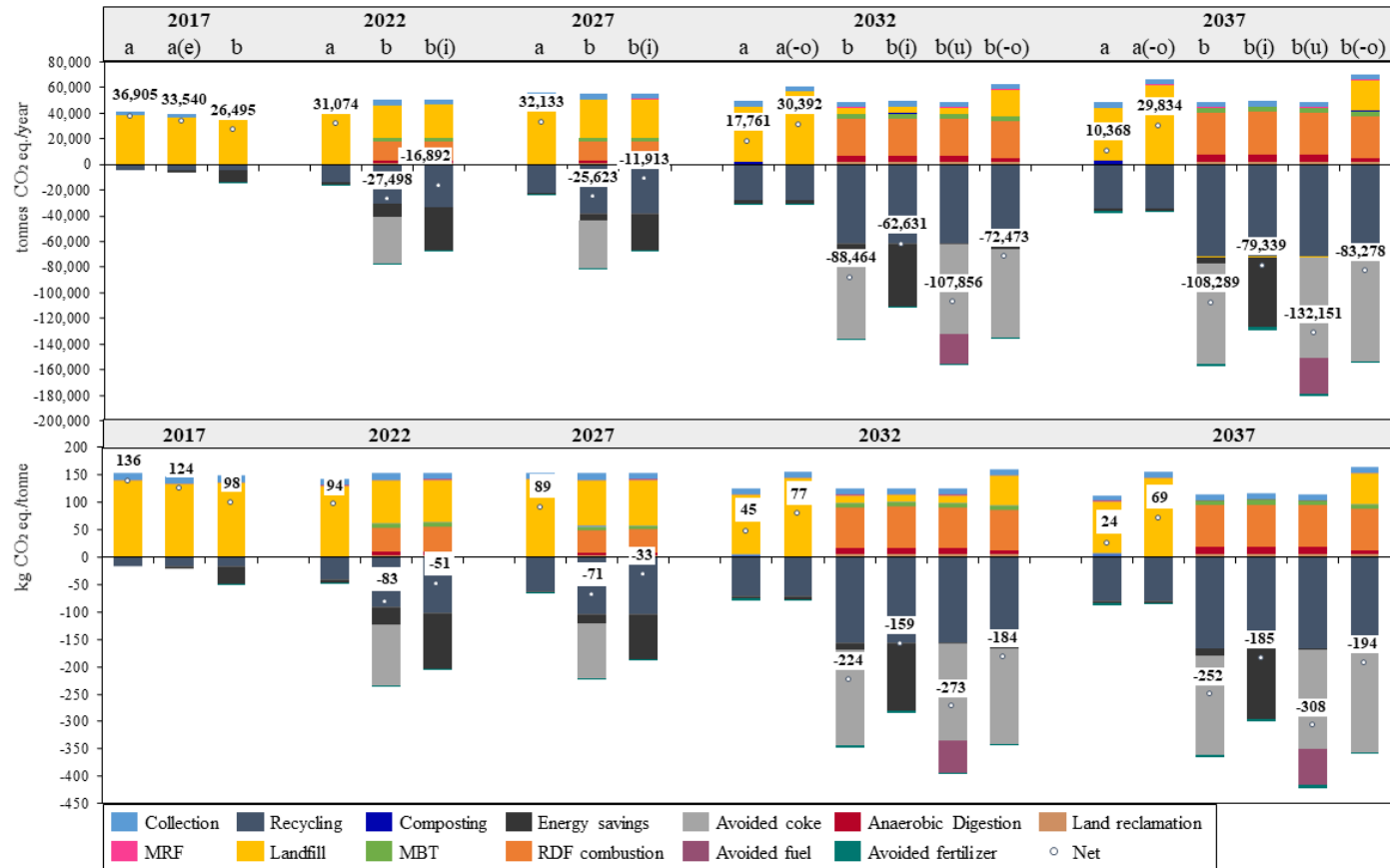


# Environmental assessment of prospective MSW management in Campo Grande, Brazil

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- Case study in a municipality in west central Brazil
- Recent published instrument to aid waste management planning - PCS
- Comparison between the current scenario, its planned development and alternative systems
- Landfill will still be needed and used in the next years, however, the amount of waste destined there needs to be diverted in the source
- MBTs can make significant contributions to the recycling rates and to avoidance of fossil fuels in the cement industry
- The system with combination of AD with the current MRF and an MBT plant with biogas upgrading to vehicle fuel presented the most effective decrease in environmental burdens
- First step should be raising awareness of the population in regards of participating in the already existing selective collection

# Environmental assessment of prospective MSW management in Campo Grande, Brazil



# Economic Assessment

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- Budget-based economic assessment of the current system compared to the alternatives proposed
- Life Cycle Costing
- Follow-up on the results from previous papers

# Observations on academic culture in Denmark

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- Denmark excels on innovation, prosperity, equality and quality of life
- Ability to communicate even without Danish
- Danes devote a lot of time to family and leisure
- Students are responsible for their own learning
- Less formalities and a closer relationship with the superiors
- Help from international office and staff to get settled

# Observations on academic culture in Denmark

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- PhD candidates are classed as employees and paid accordingly
- Less stressful work environment
- Excellent offices, library and laboratory facilities for researchers
- Work with less pressure and a lot of flexibility
- Danes have sense of financial security and the freedom and opportunity to pursue personal goals in life = less stress
- Research is very independent but you have all the help when needed

# Observations on academic culture in Denmark

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- Data is usually very well documented which facilitates research
- People are very helpful in all matters
- Social gatherings that helps improving work environment
- Danes usually don't mind others' businesses
- More expensive, but healthier lifestyle

# OBRIGADA!

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