INTRODUCTION

- New efforts are increasingly oriented towards the search for sustainable designs for Wastewater Treatment Plants (WWTP), both in water use and energy recovery. Therefore, in this work the generation of biogas from municipal wastewater has been studied through anaerobic digestion treatment.

- UASB effluent has been fed to a membrane photobioreactor (MPBR) where developed microalgae-bacteria consortia contributes to organic matter and nutrients recovery and membrane allows regenerated wastewater.

RESULTS AND DISCUSSION

- Incubation periods:
  - DUF reject samples: 42 d
  - MBR sludge samples: 25 d
- Methane percentage in biogas:
  - DUF and MBR (Fig. 1 and 2): 60-62% methane in both cases.

  Similar percentage of methane but no the same global production.

  Methane production from both type of samples reported, but it was before reported on MBR sludge samples.

  ![Graph](image1)

CONCLUSIONS

- Preliminary studies showed: higher organic matter recovery obtained in DUF reject, regarding to MBR sludge, in terms of COD and VSS. Therefore, energy recovery via anaerobic digestion from DUF technology seems more attractive.

- DUF and UASB effluents share a similar environmental concern: both exhibit high nitrogen content which limits their discharge to the environment. In this sense, membrane photobioreactors for nutrient and residual organic matter recovery can be an interesting via for enhancing the final effluent quality.

- In addition, the anaerobic digestion of domestic wastewater or DUF reject by the UASB process seems to be a promising strategy to be included in the new WWTP schemes.

**Acknowledgements**

This study has been developed in the framework of RTI2108-093736-B-100 funded by MICINN/AEI/FEDER, UE. DUF plant performance was financed by 2017REC-25 project financed by Fundación CajaCanarias and Fundación La Caixa. As well, E. Ferrera is grateful for the funding received from the grant program for non-doctoral research staff trained in the Canary Islands (FP-ACISS) from the Consejería de Economía, Industria, Comercio y Conocimiento and the European Social Fund. The authors thank the collaboration from Tenerife Water Council, SACVR, SUEZ-WATER, SEGAI-ULL, and Tratamiento y Restitución de Aguas-ULL research group lab.