

20598 - Finance with Big Data

Fintech for NGOs

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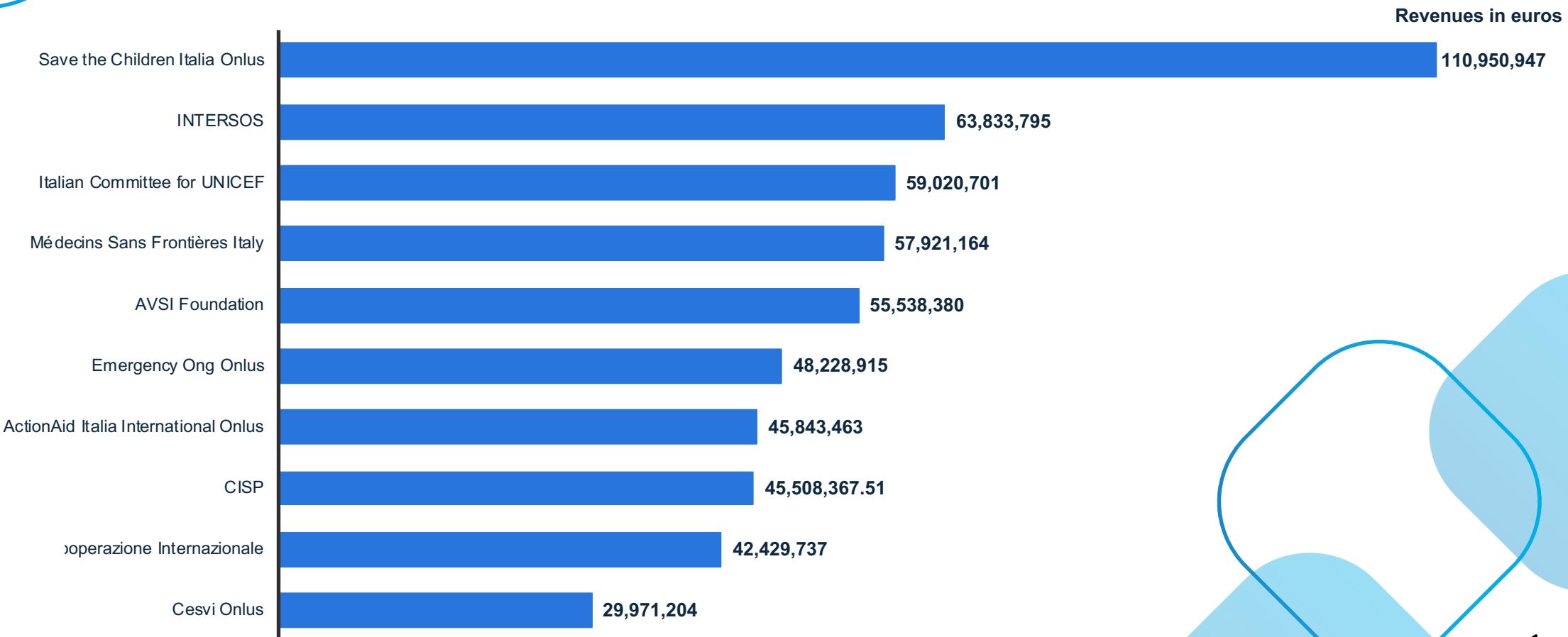
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THE ITALIAN MARKET

Every year, in Italy, more than 1 billion is raised from NGOs. 60% of these funds are given by Institutional Organizations, while 40% by **private** donors.

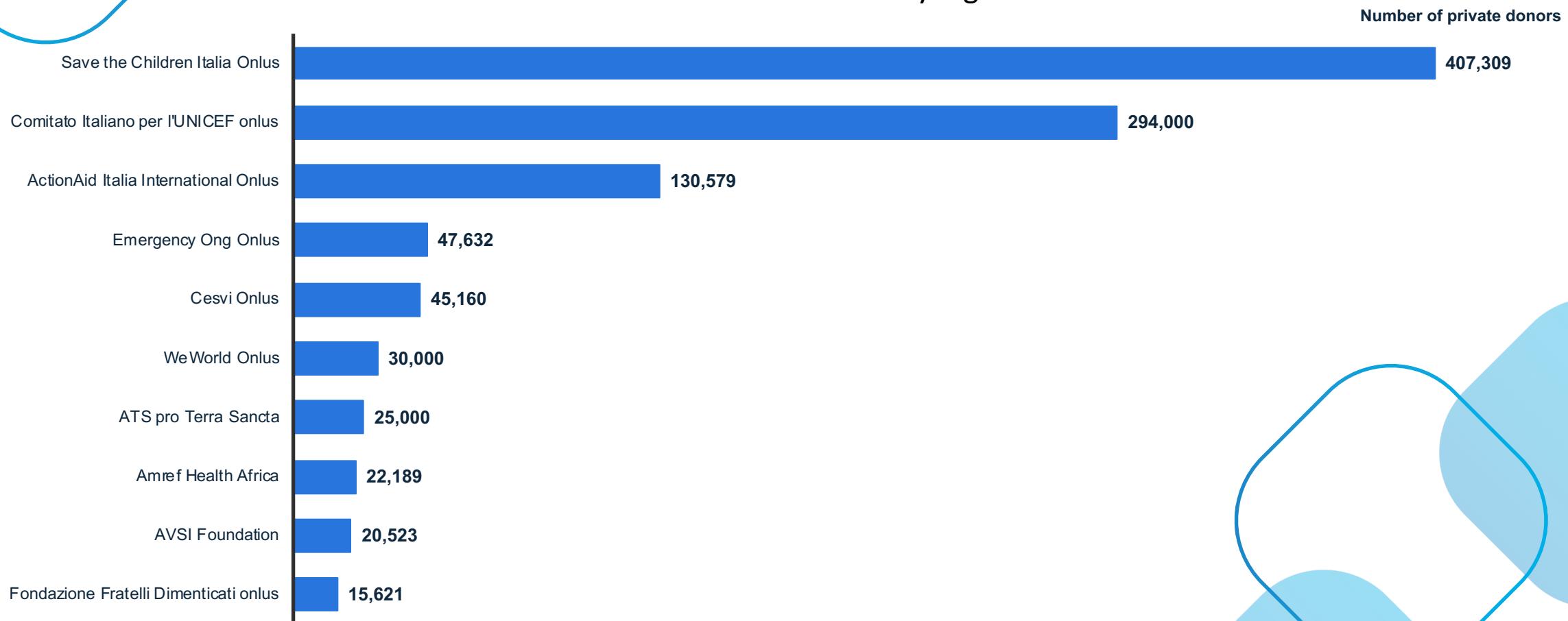
The number of private donors, in 2017, was 1.164.155, so the average donation per donor is 320 €.



THE ITALIAN MARKET

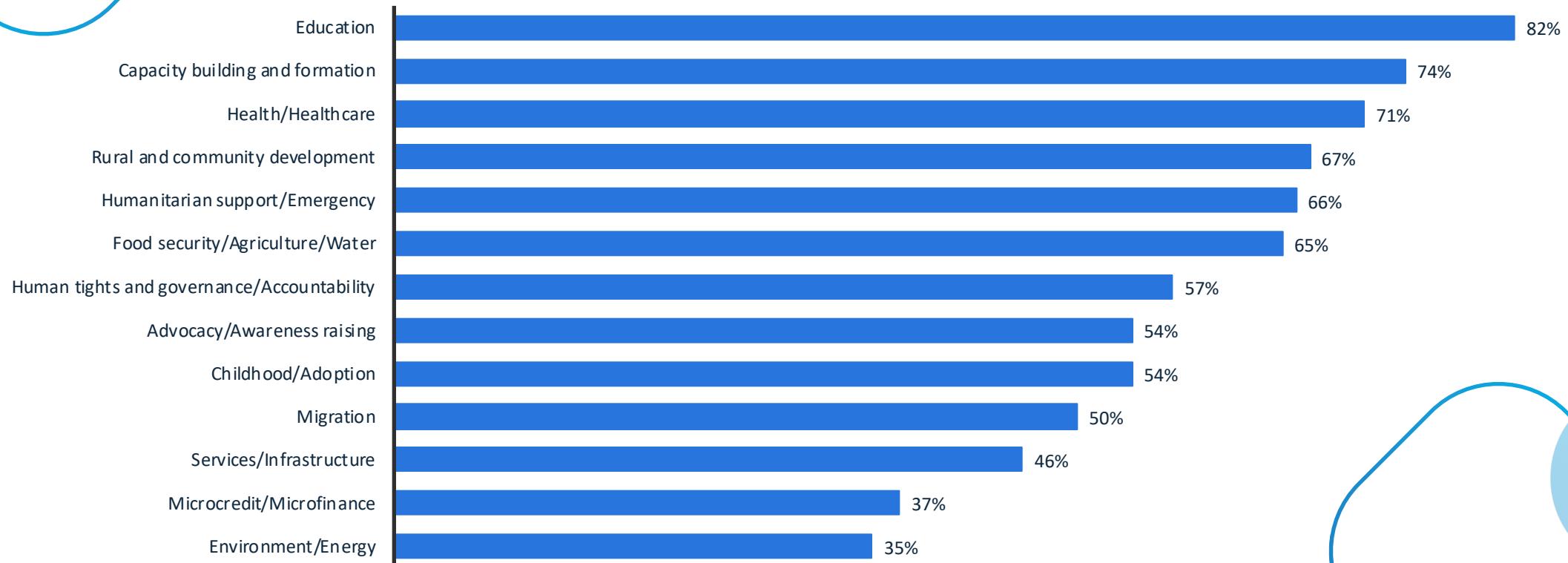
Ten leading non-governmental organizations (NGOs) and foundations in Italy in 2017, by number of private donors.

As we can see the number of donors is extremely high.



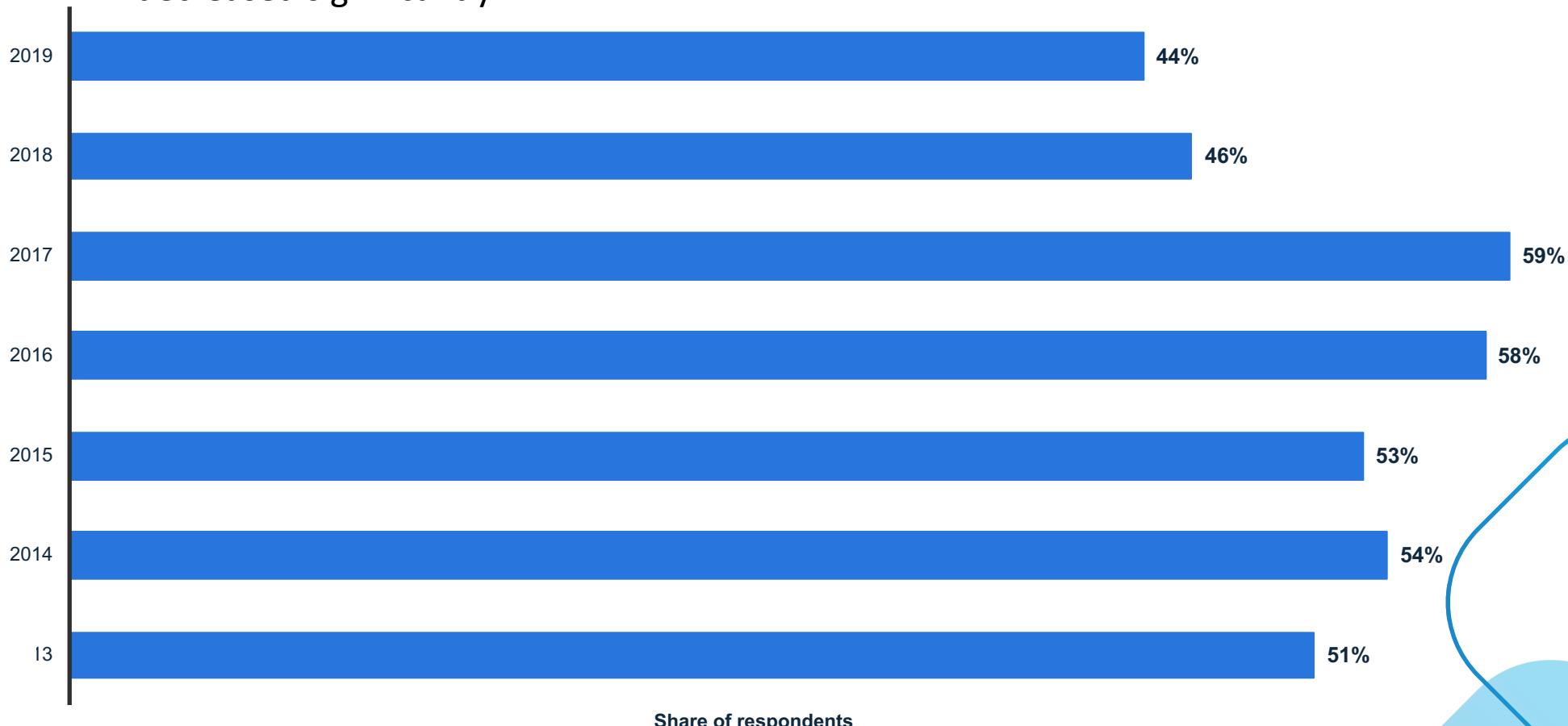
THE ITALIAN MARKET

Here we can see the division by sector of the NGOs intervention.



THE ITALIAN MARKET

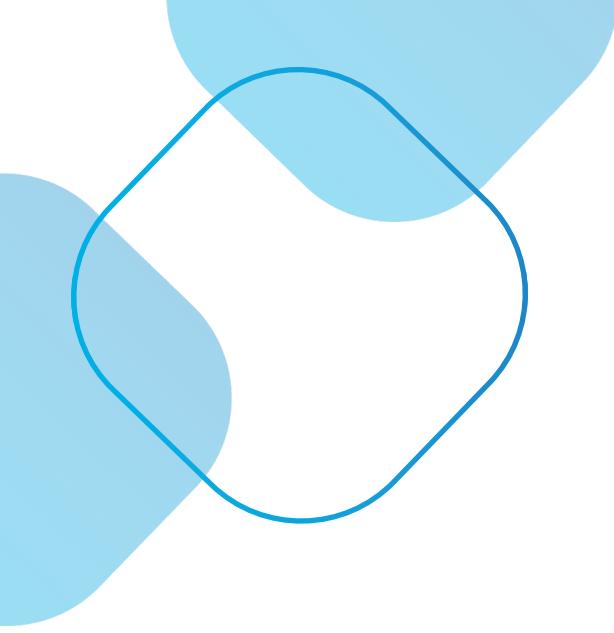
Even though the NGOs' market in Italy is big both in terms of donations and number of donors the trustiness in this sector is very low. In the graph shows the **rate of trust** in the non-governmental organizations in Italy (2013-2019) and we can observe that the value is always around 50% and, especially in the last two years, the value has decreased significantly.



THE PROBLEM

We can therefore identify a problem of **asymmetric information** between those who donate their money and those who manage the allocation of such monetary resources. This implies:

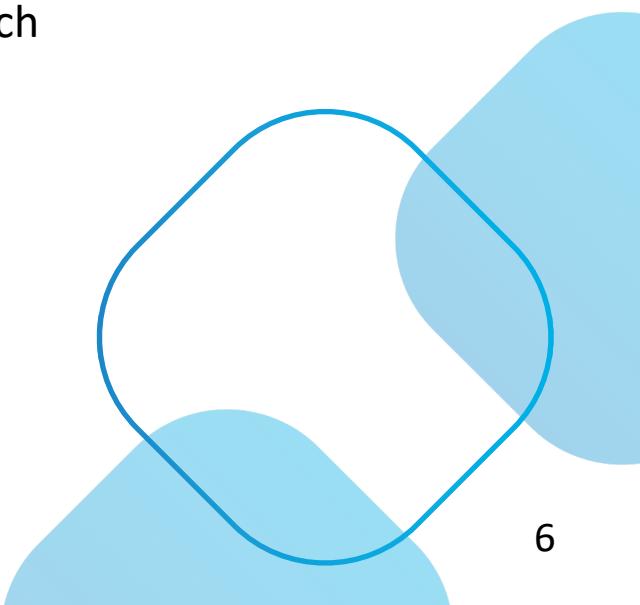
- ☑ LACK OF TRANSPARENCY AND CONTROL
- ☑ OPPORTUNITIES FOR FRAUD
- ☑ LACK OF TRUST



LACK OF TRANSPARENCY AND CONTROL

People do not have a clear and direct **overview** on how their funds are being spent and to what extent they are actually contributing to a cause.

Moreover, the documents published by charities are not guaranteed to correspond to the truth, and it cannot be imposed on donors to verify the **authenticity** of such documents.



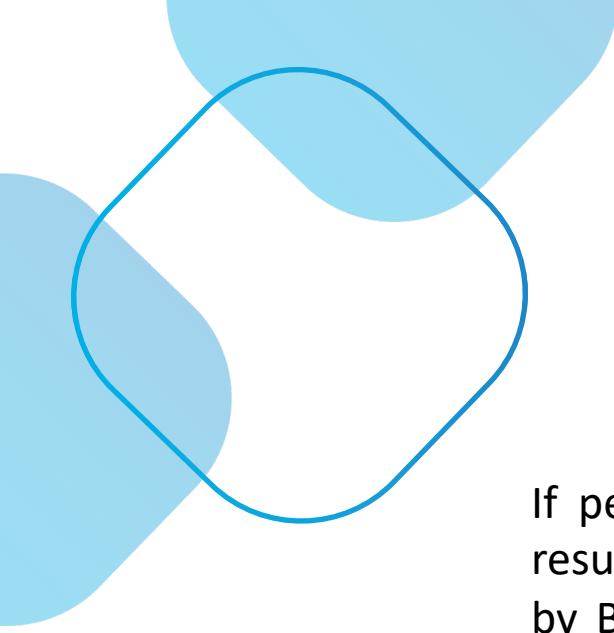


OPPORTUNITIES FOR FRAUD

If a charity does not disclose information properly, there is a greater incentive to misuse the received funds. In the past years many associations, both international and smaller ones, have been found **stealing** money donated for different projects.

A clear example were Reynolds cancer charities which were referred as the four “sham charities”: the Cancer Fund of America Inc., the Cancer Support Services Inc., the Children’s Cancer Fund of America Inc. and The Breast Cancer Society.

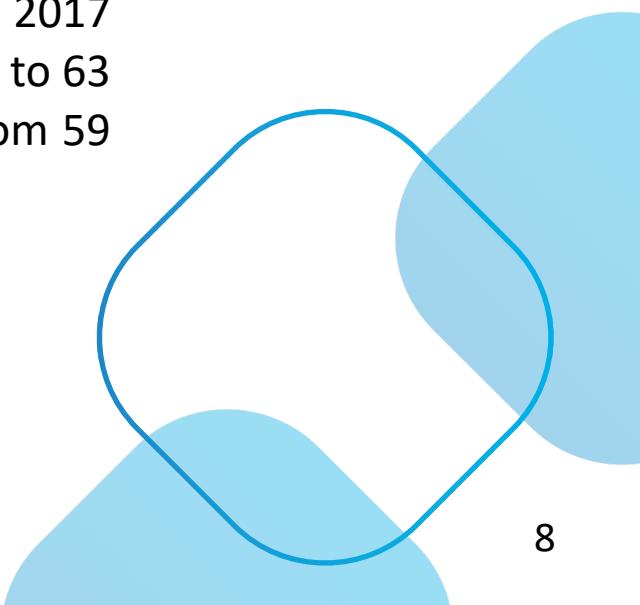
These charities were founded in 1984, but they were shut down in 2016 due to their **fraudulent activities**; for example, the Cancer Fund of America Inc. had used only 3% of the donations for funding the projects. Of course, when these fraudulent activities have been discovered by the authorities, the trust for NGOs reduces dramatically.



☑ LACK OF TRUST

If people do not have access to instruments to **monitor** information and results, their trust in such charities decreases. According to the 2018 report by BVA Doxa 'Italiani Solidali', one of the main reasons preventing Italians from donating to non-profits is the lack of trust towards charities and their management of received funds.

Also the Edelman Trust Barometer has been estimating the trust that the Italian population has with respect to NGOs: over just one year, from 2017 and 2018, the informed public has reduced their trust to NGOs from 73 to 63 percent (-10), while the general population had a reduction in trust from 59 to 46 percent (-13).



OUR SOLUTION



- ✓ The **goal** is to develop an online platform where NGOs can publish the projects for which they need funding.
- ✓ Donors can choose among different projects, make their donations in ETH and **monitor** how their money is spent.
- ✓ The platform manages donations via **smart contracts**. Each project has its own smart contract with a specific goal and deadline that first pools the money together and to which the NGO sends their money requests.

WHY A SMART CONTRACT?

IMMUTABILITY

The contract can not be modified. This means that once we set the project's goal, deadline and all the other relevant variables they can not be changed.



This ensures that contract stays the same and thus that it serves the only purpose of collecting money for the given cause. In this way we can disincentivize malignant behaviours.

WHY A SMART CONTRACT?

It requires that every transaction is validated by a pool of information miners and it tracks the expenses made.

ACCOUNTABILITY



It ensures that donors know what their money is being spent for. This makes donors realize the real impact of their donations on someone else's life.

WHY A SMART CONTRACT?

In order to validate each transaction we create a pool of information miners. They are chosen among the platform's NGOs and banks that operate where the project is located since they know better than anyone else what the NGO is doing and if the money requested has been spent on what it was meant for.

VALIDATION SYSTEM



This makes sure that transactions are approved by parties external to the project so the NGO can not use funds improperly. On the other side, the banks can improve their CSR reputations.

THE CODE

INITIALIZE THE CONTRACT

1

Each contract is initialized with a deadline, goal, location, n of miners needed and admins

ADD MINERS

2

Only the admin can specify which will be the miners to validate the transactions

DONATE

3

Donors can send money only if the deadline is still valid and if the goal has not been reached

GET REFUND

4

In case the goal is not reached, donors can ask for a refund (the function will check if the requesting account has really made a donation)

THE CODE

GET BALANCE

5

This function is accessible to anyone to see the balance of the project.

CREATE PAYMENT REQUEST

6

Once the goal of the project has been reached, the NGOs can instantiate a payment request. This means that the NGO can withdraw progressively funds from the contract and that each request needs to be validated.

VOTE FOR PAYMENT REQUEST

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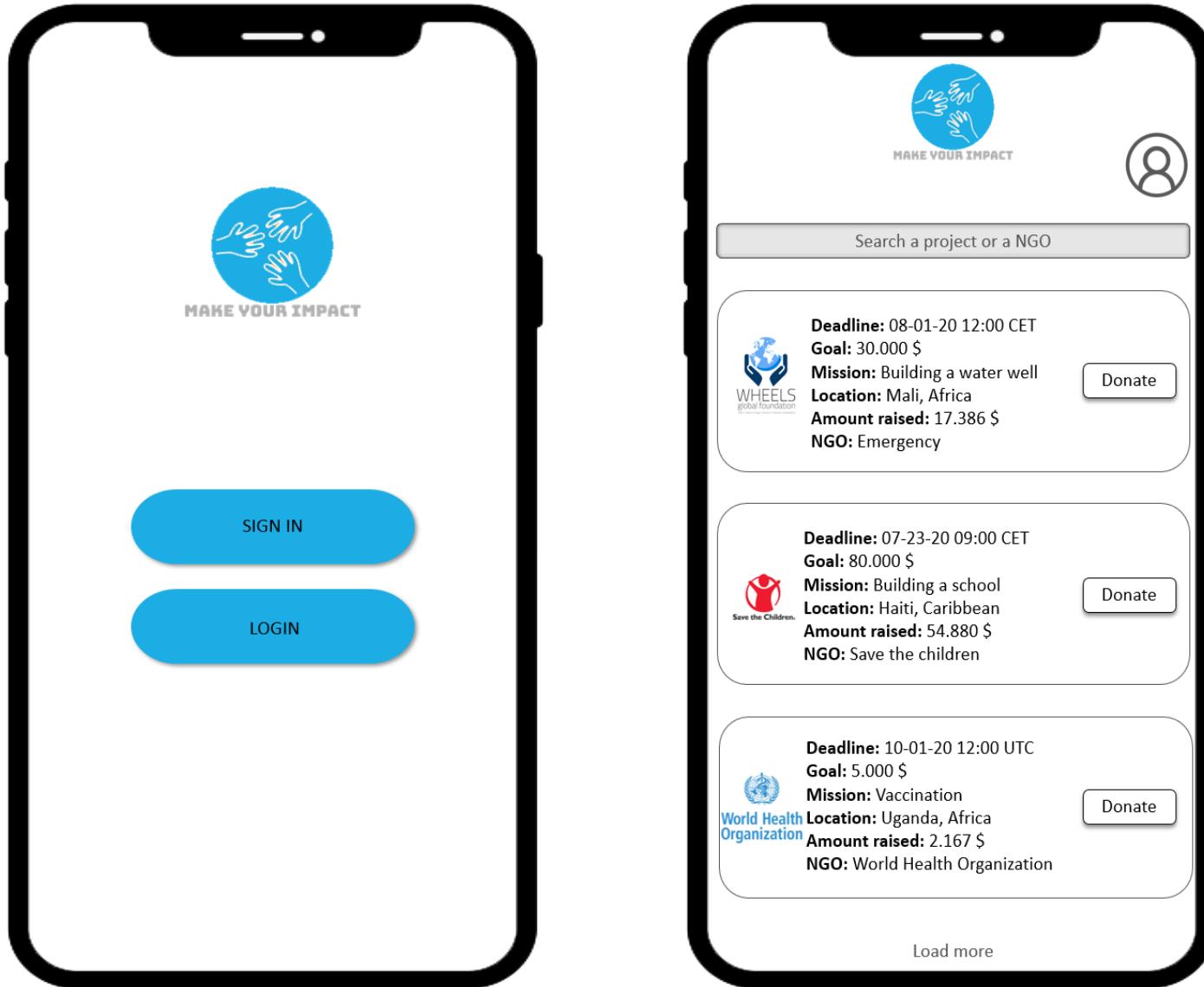
The information miners need to approve each payment request made by the NGO. Importantly, only the whitelisted information miners can vote.

MAKE PAYMENT

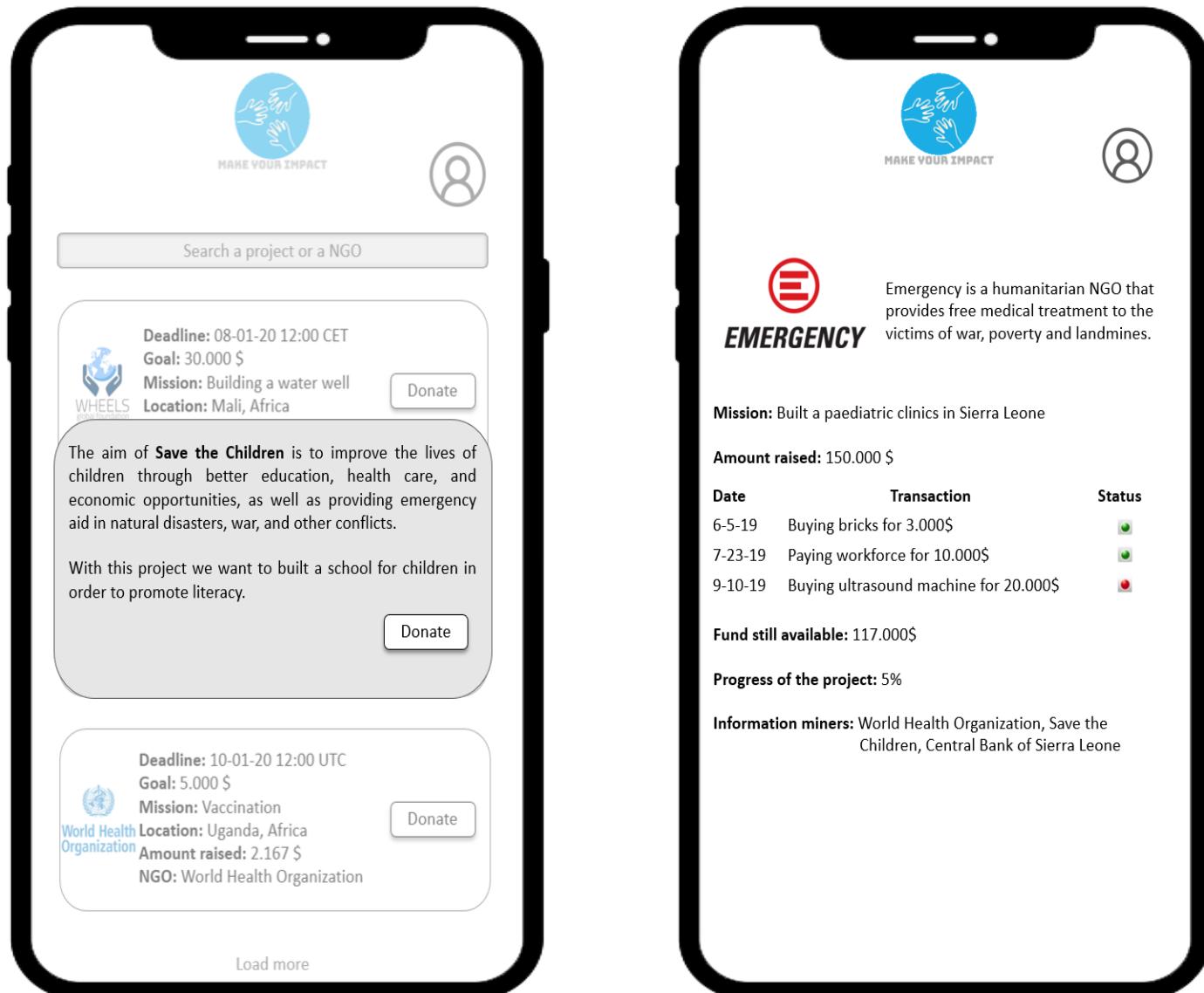
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The NGO gets the money it requested only if the majority of approved miners gave their approval.

OUR BETA VERSION



OUR BETA VERSION



FUTURE DEVELOPMENTS

Future improvements to the present work would be the following ones:

- ✓ Create a wallet where we store the funds of projects that haven't reached the goal. Once we have enough money in the wallet, the idea is to use them to try to finance all these projects that do not meet the expected goal.
- ✓ Also, if a donor gives more money than what is needed and the goal is exceeded, we can allocate those extra-fund to another project.
It would be useful to give donors the possibility to choose whether to allow for their donation to be spent on other projects, and to let them specify whether it needs to be spent for similar projects or in close-by locations to the original one.
- ✓ We can create a user-interface using Flask.
- ✓ We can improve the validation system by including among the information miners local volunteers who can monitor the NGOs. Ideally, we would devolve part of the donation fees to the maintenance of such monitoring system.

References

- Edelman Trust Barometer (2019) – www.edelman.com
- “Non profit organization and NGOs in Italy” (2017) – Statista
- “Italiani solidali” (2018) – BVA Doxa
- <https://medium.com/quick-code/learning-solidity-with-a-simple-fundraising-smart-contract-2fad8b1d8b73>
- <https://www.toshiba-blocks.com/solidity/complete-example-crowd-funding-smart-contract/>
- <https://solidity.readthedocs.io/en/v0.5.14/solidity-by-example.html>

THANK YOU