BASEX

UNIVERSAL EVALUATION ENGINE
IMPACT. EXTERNALITIES. COBENEFITS.

Work in progress.
Living document.
Current status: v0.1
Released on 29th September 2023.
Expect edits and improved formatting *(screenshots, images, footnotes)*
Check also https://basex.com and https://wiki.basex.com
Contact us in case of any questions info@basex.com

1. MISSION / VISION

All of these the statements accurately describe our mission / vision:

- **Universal evaluation engine**
- Universal value system
- New definition of value
- Evaluating impact
- Accounting for externalities and cobenefits
- Fair economic system that is accounting for the full cost of products and services.

2. PROBLEM(S)

- Climate change.
- Economic system that relies on debt, interest, compound interest, exponential growth.
- Lack of regulation and enforcement towards harmful activities that are currently legal and profitable.
- Lack of metrics to measure things that are difficult to account for.

3. NOTABLE EXAMPLES

3.1. FRESH AIR

Fresh air = no value
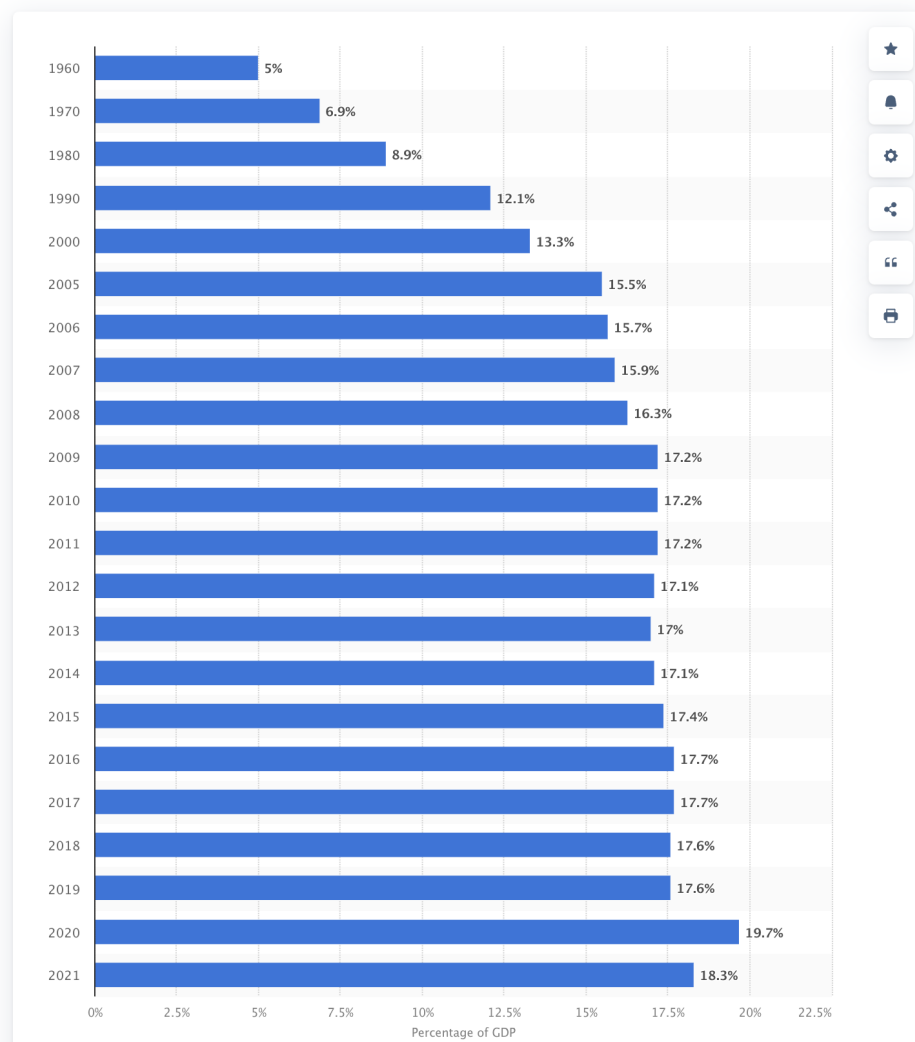Polluted air = sickness, medical bills, good for the economy

3.2. OBESITY AS BUSINESS MODEL

Being overweight causes loads of collateral damage to human health.

Healthcare (sickcare) is a massive business in the US:
https://www.statista.com/statistics/184968/us-health-expenditure-as-percent-of-gdp-since-1960/

U.S. national health expenditure as percent of GDP from 1960 to 2021

Year	Percentage of GDP
1960	5%
1970	6.9%
1980	8.9%
1990	12.1%
2000	13.3%
2005	15.5%
2006	15.7%
2007	15.9%
2008	16.3%
2009	17.2%
2010	17.2%
2011	17.2%
2012	17.1%
2013	17%
2014	17.1%
2015	17.4%
2016	17.7%
2017	17.7%
2018	17.6%
2019	17.6%
2020	19.7%
2021	18.3%

3.3. ADDICTION AS BUSINESS MODEL (OPIOID EPIDEMICS)

This is a mind boggling example.
The manufacturer of the drug was aware of the addiction but pursued profit regardless of the damage it was causing to people who were suffering from it.

World Health Organization
https://www.who.int › Newsroom › Fact sheets › Detail ⋮

Opioid overdose

29 Aug 2023 — According to WHO estimates, **approximately 125 000 people died** of opioid overdose in 2019. Opioid overdoses that do not lead to death are several ...

CDC   Centers for Disease Control and Prevention (.gov)
https://www.cdc.gov › opioids › basics › epidemic ⋮

Understanding the Opioid Overdose Epidemic

From 1999-2021, **nearly 645,000 people** died from an overdose involving any opioid, including prescription and illicit opioids[1]. This rise in opioid overdose ...

Data Overview · Drug Overdose Deaths · Fentanyl · Commonly Used Terms

3.4. FOREST

Official government source:
https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/woodlandnaturalcapitalaccountsuk/2022

> *"The asset value of UK woodlands was estimated to be £351.4 billion in 2020; while timber and wood fuel is often seen as the main woodlands asset, it accounted for 3.6% or £12.6 billion."*

> *"Health benefits of recreation, a newly estimated cultural service in the UK natural capital accounts, were 17.8% of the total asset value in 2020 (£62.4 billion)."*

3.5. BATS

Official government source:
https://www.fws.gov/story/bats-are-one-most-important-misunderstood-animals

"Recent studies estimate that bats eat enough pests to save more than $1 billion per year in crop damage and pesticide costs in the United States corn industry alone. Across all agricultural production, consumption of insect pests by bats results in a savings of more than $3 billion per year."

3.6. ELEPHANT

IMF:
https://www.imf.org/Publications/fandd/issues/2020/09/how-african-elephants-fight-climate-change-ralph-chami

"If we then take the total value of the service provided by African forest elephants and divide it by their current population, we find that each elephant is responsible for service worth more than $1.75 million. On the other hand, the ivory of an elephant killed by poachers fetches only about $40,000, so it is clear that the benefits from a healthy and thriving elephant community are substantial."

3.7. WHALE

IMF:
https://www.imf.org/Publications/fandd/issues/2019/12/natures-solution-to-climate-change-chami

"Our conservative estimates put the value of the average great whale, based on its various activities, at more than $2 million, and easily over $1 trillion for the current stock of great whales."

4. POLITICAL SUPPORT. PUBLIC AWARENESS

United Nations. G20. World Economic Forum.
Not just hippie-eco-zealots supergluing themselves to the streets and throwing soup at the paintings, it's the most reputable organizations in the world.

Transforming our world: the 2030 Agenda for Sustainable Development

People

We are determined to end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment.

Planet

We are determined to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations.

Prosperity

We are determined to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.

Beyond GDP

Is our love-affair with GDP coming to an end? As the business landscape reinvents itself, demographics shift, inequality expands, climate change gets worse and technology continues to advance at breakneck speed, Gross Domestic Product is struggling to stay relevant. In order to keep up with the changes wrought by the Fourth Industrial Revolution, many are arguing that we need to find a new measure to assess the health of our economies and – more importantly – the people living in them.

Follow our series examining the past, present and future role of GDP – and the new economic models that could replace it.

5. USE CASES

5.1. COMMON THEME

Value that is not obviously quantifiable in the current system

5.2. PHILANTHROPIC DONORS

For example: Open Philanthropy

Measuring impact is a difficult problem. Currently they are using DALY as the primary metric: https://en.wikipedia.org/wiki/Disability-adjusted_life_year

That metric is widely in the GiveWell / Effective Altruism circles. But it is not the only metric.

5.3. FORTUNE 500 ESG REPORTS

SEC doing public consultation: https://www.sec.gov/securities-topics/climate-esg

Currently ESG reports are mostly marketing / PR / greenwashing. There is little scrutiny. They do not focus on negative stuff, everything is good for the planet, green, eco friendly - aggressive greenwashing, hard to establish what is for real and what is the full picture.

5.4. PENALIZING BAD ACTORS

Whenever there is an activity that causes harm - it can be reported and evaluated.

In the next chapters we will describe how the penalisation mechanism will work.

5.5. INCENTIVISING GOOD ACTORS

Cliche examples: planting trees, collecting trash.

More impactful example: a farmer engaging in regenerative practices that are beneficial to the health of the exosystem but not profitable in the current economic system.

5.6. CARBON CREDITS

Currently participation in the carbon credit markets is prohibitively expensive and complicated.

It is the research on existing carbon credit methodologies (so complicated) that prompted us to work on BaseX.

6. WHO ARE THE EXISTING PLAYERS IN THE CARBON CREDITS MARKET?

Brief overview that has a purpose of describing the complexity of the current status quo.

6.1. VERRA

https://verra.org/validation-verification/

Become a VCS VVB

The growth of the voluntary carbon market has fueled demand for new validation/verification bodies (VVBs). New VVBs may be located anywhere in the world and have two main pathways to receive VCS authorization:

- Approval under a VCS-approved GHG program such as the United Nations Clean Development Mechanism (CDM) as a Designated Operational Entity (DOE)
- Accreditation by an International Accreditation Forum (IAF) member body for ISO 14065 scope VCS. IAF member bodies with such accreditation programs currently include:
    - ANSI National Accreditation Board (ANAB)
    - Entidad Mexicana de Acreditación (EMA)
    - National Accreditation Board for Certification Bodies (NABCB)
    - Organismo Nacional de Acreditación de Colombia (ONAC)
    - South African National Accreditation System (SANAS)
    - Sri Lanka Accreditation Board for Conformity Assessment (SLAB)
    - Standards Council of Canada (SCC)

6.2. GOLD STANDARD

TLDR: costly, complicated, relying on 3rd party actors. Average farmer in Africa cannot even dream about it.
https://www.goldstandard.org/take-action/certify-project
https://www.goldstandard.org/guided-tour/project-developers#project-developers

CERTIFICATION REVIEW FEES

Project Types/Party	Fee Type	Fee
Microscale Carbon	Preliminary Review	$500 per project
LUF Carbon	Preliminary Review	$3,500 per project
All other	Preliminary Review	$900 per project
VER Carbon	Project Design Review	$0.15 per credit minus Preliminary Review Fee
GS CER Carbon	Project Design Review	$0.05 per credit minus Preliminary Review Fee
Renewable Energy Labels	Project Design Review	$1,500 per project
ADALYs, Black Carbon	Project Design Review	$4,500 per project
Microscale Carbon	Performance Review	$650 per project
LUF Carbon	Performance Review	$1,500 per project
ADALYs, Black Carbon	Performance Review	$4,500 per project
All other	Performance Review	$1,000 per project

6.3. REGEN.NETWORK

Screenshot from one of their documents:
https://regen-registry.s3.amazonaws.com/Soil+Sampling+Resource+Guide_V3_11_02_20.pdf

1. LABORATORY ACCREDITATION REQUIREMENTS

Clients may choose a laboratory that is certified in their local area, or a part of a land-grant institution.

1.1 United States Accreditation Requirements

For the United States, the laboratory chosen must have an accreditation according to one or more of the following:

   a. North American Proficiency Testing Program (NAPT)
       i. NAPT 2020 Private Labs Accredited
   b. Agriculture Laboratory Proficiency Program

1.2 Australia Accreditation Requirements

For Australia, the laboratory chosen must have an accreditation according to:
   a. National Association of Testing Authorities, Australia

2. SOIL SAMPLING LABORATORY RESULT REQUIREMENTS

Soil sample laboratory results must include the following:
   a) Soil Organic Carbon
   b) pH
   c) Macronutrients:
       i) Nitrate-Nitrogen
       ii) Ammonia-Nitrogen
       iii) Total Nitrogen
       iv) Phosphorus
       v) Potassium
   d) Micronutrients:
       i) Cation Exchange Capacity (CEC)
       ii) Base Saturation Estimates as percent CEC for
           1) Calcium
           2) Magnesium
           3) Potassium
           4) Sodium
           5) Aluminum

The complexities related to the current carbon credit markets are mind-boggling.

"Most (84%) of the world's 570 million farms are smallholdings; that is, farms less than two hectares in size."[1]

It is our genuine belief that we want all of them to do **reasonably good job** that serve the long-term wellbeing of the planet. No need for precise measurement of every square inch of the soil. Using BaseX as methodology, we will rely on remote sensing and verification, as opposed to costly and problematic measurements.

7. KEY DIFFERENCES / UNIQUE SELLING PROPOSITION

7.I. SCALABILITY

There are no in-house assessors. No cost in training, no cost in onboarding.
Leveraging Kleros community of jurors

7.2. PERMISSIONLESS (INCLUSIVITY)

No gatekeepers. Anyone can participate in the BaseX

7.3. TRANSPARENCY

One of the key properties of blockchain.

7.4. ACCOUNTING FOR NEGATIVE VALUE

BaseX headline "universal evaluation engine" means accounting for positive and negative value as well.

8. FLOW OF OPERATIONS

8.I. CREATE AN ORGANIZATION

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[1] https://ourworldindata.org/smallholder-food-production

Potentially a better wording would be "entity" / "user" / "participant" to indicate that it is possible for individual humans to use the platform.

8.2. SUBMIT A REPORT

There is no specified format.

Environmental reports of Fortune 500 are not standardized / not regulated.

Reports coming from other organizations also do not have a universally agreed format.

For these reasons we do not specify the format currently - it may emerge at some point.

We believe that those doing the work on the ground have the best understanding of their accomplishments and it should be their responsibility to present their case.

REQUIREMENT: provide evidence. Photos. Facebook updates. Local press.

Even if we were using an in-house reporting mechanism, the data would come from people on the ground.

Fact-checking layer: all the submitted reports are subject to verification by Kleros jurors, more about Kleros later on.

8.3. SUBMIT EVALUATION

Anyone can submit the evaluation, including those who submitted the report.

This is based on the same assumption - those doing work on the ground have the best understanding of its value.

Fact-checking layer: just like with the reports

8.4. ROLE OF KLEROS

In the blockchain world there are computers (nodes) executing code but they have no way of knowing what happened in the real world. It is called the "oracle problem". Kleros is a decentralized arbitration platform that aims to solve disputes in a variety of contexts and provide

the source of truth. It is achieved through concept called Schelling Point, named after economist Thomas Schelling who won Nobel Prize in Economics. The concept is similar to juries

More info about Kleros: https://kleros.io/whitepaper.pdf

In the current phase we are using Kleros front-end to create disputes: https://curate.kleros.io/

8.5. MULTIPLE LINES OF DEFENSE

Multiple lines of defense to eliminate fraud

- Human honesty, taking pictures
- Google Maps, satellite photos *(similar to GainForest)*
- Kleros jurors approving the submission to the list
- Even after a report is added, it can be removed
- I will not fly to Kenya but happy to pay $5 for someone local to "don't trust verify"
- It pays off to be fair, if you are a fraud, that's not good for business, you scammed us for $100 but bye bye forever

9. ECONOMIC INCENTIVES AND BUSINESS MODEL

PVT = positive value token
NVT = negative value token

Alternative name: GIFT (Generated Impact Functional Token

9.1. WHAT GIVES PVT AND NVT THE VALUE?

The economic incentives are an essential part of the BaseX and loads of thought has been put towards designing a healthy economy.

9.1.1. DISPLAYING PVT AS A PROOF OF IMPACT

Collecting Picasso paintings as a flex? Or maybe collecting PVT to display proof-of-impact?

9.1.2. PUBLIC PRESSURE TO COMPENSATE FOR NVT

With enough eyeballs, press, public security those who generate PVT will be forced to compensate for their damage. At some point it can become the law, especially in climate-aware forward-thinking jurisdictions that have unified culture. Finland and Estonia come to mind.

9.1.3. BUSINESSES ACCEPTING PVT TO OFFER A DISCOUNT

That's totally doable and achievable right now without any changes in law. Whoever wants to signal their green credentials can simply accept PVT

We have the end goal in mind and our priority on the roadmap is to implement these features. As of Sept 2023 we allow basic minting of PVT.

9.2. WHO MAKES MONEY ON THE PLATFORM

Copy-paste from the pitch deck:
https://docs.google.com/presentation/d/1R2BkNcgwMrjBSY_CwQxJIvrUZBAQy1T9MPqCKaftg D4/edit?usp=sharing

👹 Polluters causing **NVT** - pressure to compensate for damage by purchasing **PVT**

🌱 Communities creating **PVT** - ability to make use of the impact generated

😇 Businesses accepting **PVT** *(offering discount)*

🦸 Entities buying **PVT** directly or from a pool *(philanthropic impact)*

⚖️ Kleros jurors earning fees

👀 Fact-checkers on the ground *(I will not fly to Kenya, will pay $10 to someone local)*

💻 Marketplace of professional services: writing reports and evaluations

💰 Volume will allow us to generate revenue and ensure economic sustainability

10. IMPACT INVESTMENT

We are aware we are not a typical venture capital investable business.
We are unlikely to go 100x in valuation.
With that said, we genuinely believe that the value that is generated by us by providing useful service to all other impact projects that are not profitable in the current economic system.

II. TEAM

II.I. MARS ROBERTSON (CO-FOUNDER)

https://www.linkedin.com/in/marsrobertson/

COP23 in Bonn
COP24 in Katowice
COP26 in Glasgow
Davos in May 2022

That was the moment when I realized the "cavalry is not coming" and despite the odds I've embarked on a massive mission.

Some setbacks, endless rejections, but always failing forward

II.2. CAMERON KING (CO-FOUNDER)

https://www.linkedin.com/in/cameron-king-199646137/

II.3. GREG TRIFAN (FULL-STACK WEB3 DEVELOPER)

https://www.linkedin.com/in/grigore-trifan-666biyz/

I2. APPENDIX A: WHAT IS YOUR WHY?

Climate change:
- Tipping points
- Feedback loops
- Non-linear changes
- Noone in charge, noone has a clue
- Metacrisis, polycrysis, everything crisis

Conclusion: We need to have a backup civilization on Mars, before we go extinct on Earth.

But that presents a dilemma:
- Work on climate change on Earth, slow down the collapse, get us more time to go to Mars
- Focus on Mars directly, surely in the process we will discover some new tech that will make life on Earth more user-friendly

So do you work on climate change or on backup civilization? What if you could have both?

BaseX, the universal evaluation engine, is a project that is practical to solve climate change and at the same time will be useful with the backup civilization on Mars.

You can also trace origin of the name:

SpaceX: making life multiplanetary
BaseX: making life multiplanetary, starting from the Earth

13. THANK YOU FOR READING THIS FAR

This whitepaper is work in progress. Expect some edits so it is more visually appealing.
Done is better than perfect.