regenerative Agriculture

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WHAT IS REGENERATIVE AGRICULTURE

regenerative Agriculture

Definition: Regenerative agriculture describes holistic farming systems that, among other benefits, improve water and air quality, enhance ecosystem biodiversity, produces nutrient-dense food, and store carbon. (*FAO, Regenerative Agriculture*)

4 Goals

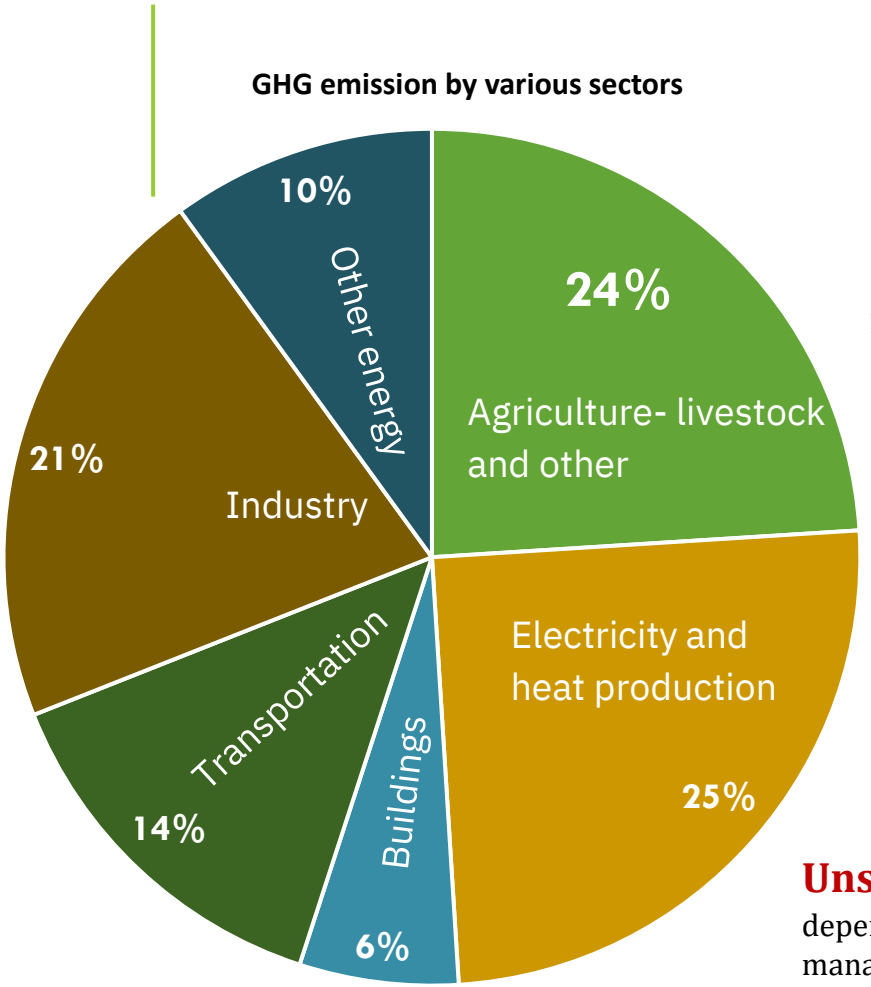
Soil
Scale up farming practices that help protect soil health and increase soil organic matter

Water
Reduce chemical farm inputs, optimize organic fertilization, biological pest control and irrigation techniques

GHG reduction
Adopting farming practices which will help to reduce GHG emission and sequestration of carbon in to the soil

Biodiversity
Increase plant and animal biodiversity above and below the ground

WHY REGENERATIVE AGRICULTURE



Methodologies of regenerative agriculture will help to:

Limiting climate change and global worming: Agriculture is one of the major affected and impacted sector of the climate change. It generates **19–29%** of total greenhouse gas (GHG) emissions.

Support global food needs. By 2050 worlds population might get touch 10 billion, which needs to be feed by considering environment.

Resilience to extreme weather events During 2018-2019 around 25% of land has been degraded while in India its 29.7%. In six years (2015-21), the country lost 33.9 million hectares of the cropped area due to floods and excess rains and 35 million hectares due to drought

Contribute to biodiversity Versatile species are beneficial not only to the farming business but environmental sustainability as well, which is ultimately important in regenerative agriculture

Unsustainable input dependency: Practices of regenerative agriculture reduce external input dependency and promote natural resource management, such as crop rotations, composting, and integrated pest management

Economic viability of farmers Regenerative agriculture offers potential economic benefits by reducing input costs, improving soil health, enhancing market access for sustainably produced goods.

CHALLENGES FOR SMALLHOLDERS

- **Lack of awareness and knowledge**: Limited access to information, education, and extension services on regenerative agriculture, as well as traditional farming practices that may not prioritize regenerative approaches

- **Economic constraints:** Transitioning to regenerative agriculture practices may require initial investments. E.g. Application of organic/natural inputs, use of renewable energy such as solar pumps,

- **Land tenure and fragmentation:** Many farmers have small landholdings, and fragmented land parcels can limit the implementation of regenerative practices such as crop rotation, cover cropping, agroforestry, rainwater harvesting, etc.

- **Market access and pricing:** There may be limited demand or lower prices for regeneratively produced agricultural products in the market compared to conventionally produced products.

- **Social and cultural factors:** Traditional farming practices, cultural norms, and social expectations around agriculture may not always align with regenerative agriculture principles.

- **Infrastructure and logistics:** Access to quality seeds, tools, equipment, irrigation facilities, storage facilities, transportation, and processing facilities.

regenagri **Standard criteria: Farming standard**

regenagri Standard criteria: Applicability and Objectives

Applicability in agricultural operations

Crop production

Agroforestry systems

Holistic livestock management

Objectives

- Promote the build-up of humus
- Reactivation of soil organisms to increase the nutrient cycling capacity and soil fertility.
- Reduction of external synthetic inputs
- Increase in water holding capacity
- Overall increase in farm resilience
- Atmospheric CO_2 can be stored in the soil
- Increase in local biodiversity
- Remuneration for the farmer to transition

regenagri Standard criteria: methodology

5 Pillars

- Regenerative crop production
- Regenerative livestock management
- Biodiversity
- Other management practices (water/ pollution/energy)
- GHG emissions / Carbon sequestration

30 focus points

Some examples:

- Cover crops
- Crop rotation
- Rotational grazing
- Buffers on watercourses
- Pollution management
- Biodiversity

Assessment and score

- Contextualization based on farming conditions (climate, soil etc.)
- Farm baseline
- Minimum score for certification (65%)

Continuous improvement

- Identification of improvement practices
- Measurement of improvement

regenagri Standard criteria: 30 focus points

Crop Production

1. Cover-cropping
2. Tillage management
3. Crop rotation
4. Inter cropping
5. Perennial cropping
6. Natural fertilizer strategies
7. Synthetic fertilizer reduction
8. Natural crop protection strategy
9. Synthetic pesticide reduction
10. Irrigation efficiency measures
11. Soil sampling

Livestock management

1. Rotational grazing
2. Grazing density
3. Grazing period
4. Multi species livestock integration
5. Grassland botanical diversity
6. Animal feed
7. Calf feed
8. Animal health

Landscape management

1. Biodiversity
2. Buffer around watercourses
3. Hedgerows and windbreaks
4. Conservation natural habitat
5. Afforestation

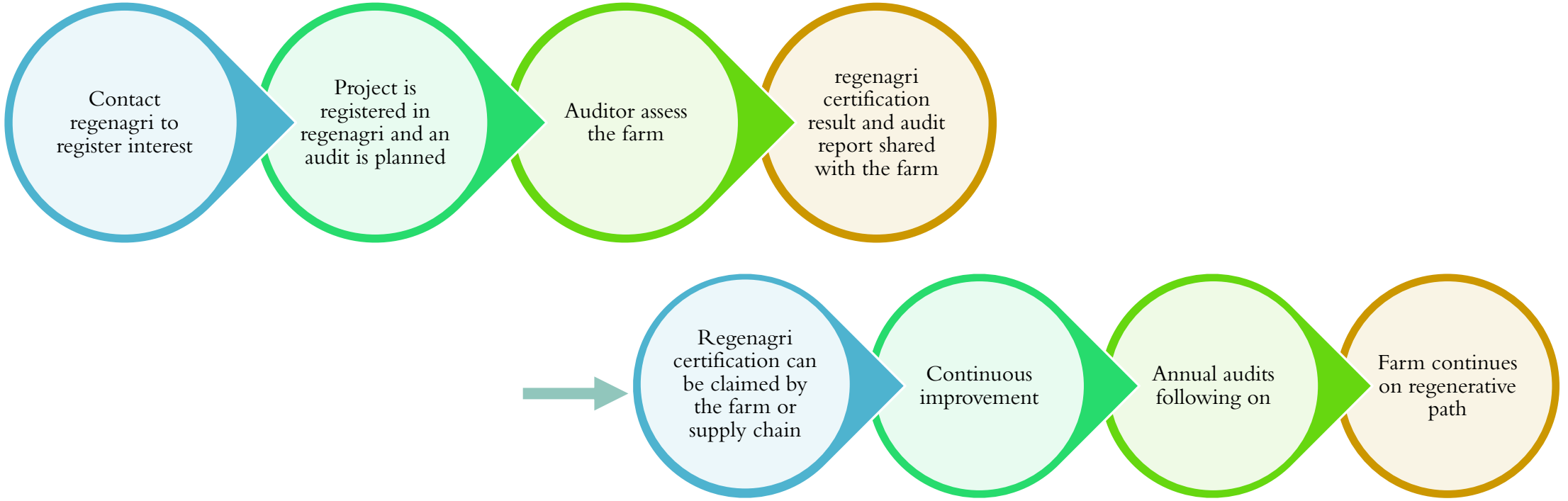
Other farm management practices

1. Water quality and pollution prevention
2. Plastic pollution prevention
3. Rainwater harvesting
4. Community involvement
5. Renewable energy

Emission verification

1. Greenhouse gas emissions

Certification process for regenagri farming standard



- Audit cycles are **3 years**
- minimum threshold of **65%**

- Based on **continuous improvement not pass/fail**
- This means there are **no non-conformities**
- For larger certifications **a square root can be used**

regenagri methodology: continuous improvement

Audit result (baseline)	Yearly improvement	Cycle improvement
65% - 69%	6%	16%
70% - 74%	6%	14%
75%-79%	4%	12%
80%-84%	4%	10%
85%-89%	2%	6%
90%-94%	2%	4%
95% and over	0%	0%

Once a farm reaches regenagri certification (65% threshold) they need to **show yearly continuous improvement** in order to maintain certification. Certification follows a three-year cycle, yearly improvement needs to be displayed throughout the 3 years, and at the end **cycle improvement needs to be met**.

If the three-year cycle improvement percentage is not met, the farm will lose certification and will need to wait one year before being able to apply again for the regenagri certification.

BUSINESS CASE FOR FARMERS

Alarming issues	Solutions by regenagri adoption
Additional income source	Participation of farmers in carbon markets or other incentive programs
Social and Community	Prioritizes building relationships between farmers, consumers, and local communities
Resilience to Market Volatility	Diversified farming systems, which can reduce farmers' reliance on a single crop or commodity
High cost of production	Reduced need for chemical inputs resulting in potential cost savings for farmers
Environmental Sustainability	Promotes biodiversity, reduces erosion, and enhances water quality, which can benefit the surrounding ecosystem and wildlife
Degrading soil health	Building healthy soils through practices

Scale of solution

BENEFITS

Ecological Benefits

- Improvements in soil health and fertility
- Foundation of healthy water, nutrients, and carbon cycling- as evidenced by healthier crops, increased yields, improved soil test results, and vibrant microbial communities
- Biodiversity on land, in the air, and in the water including richer plant, bird, and insect populations
- Reduced soil erosion
- Reductions in water pollution- including contributions to harmful algal blooms- due to fewer chemical inputs
- Improvements to water-holding capacity in the soil

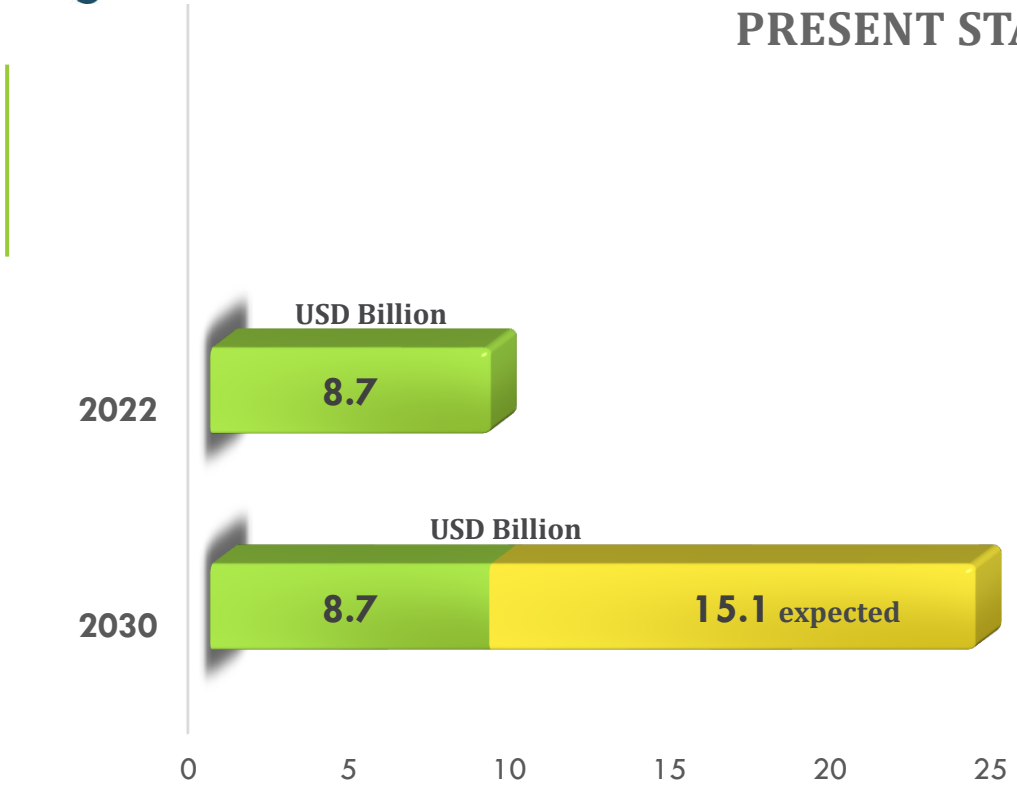
Community Benefits

- Networks of growers who exchange information, learn from one another, and build community
- On-farm/on-ranch visits and networks of farmers' markets that help farmers and ranchers build stronger relationships between consumers and their food

Economic Benefits for farmers

- Cost savings from reduced off farm inputs
- Financial security from diversified revenue streams
- Mental joy and satisfaction.
- The health of farmers, farmworkers, and downstream communities from reduced use of and exposure to harmful chemicals

PRESENT STATUS AND FORECAST



Market forecast to grow at a CAGR of 14.4%

The global RA market size is expected to reach USD 23.84 billion by 2030

RA techniques are removes Carbon from atmosphere and store in soil aiding the fight against climate problems.

These factors are driving investments from governments, players, welfare associations etc.

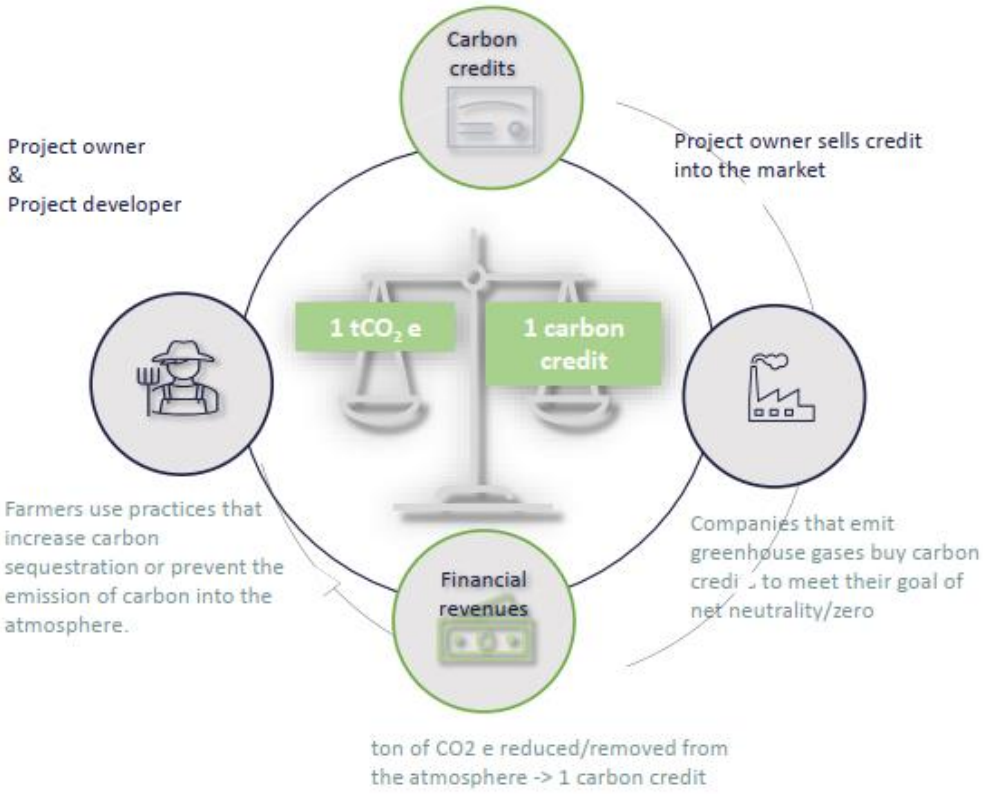
Source: https://www.researchandmarkets.com/reports

WHAT IS CARBON STANDARD?

- **One C credit is equal to :**
- **1 ton of CO2eq emission stored in the soil or in the biomass**
- **1 ton of CO2eq emisión that has been avoided**

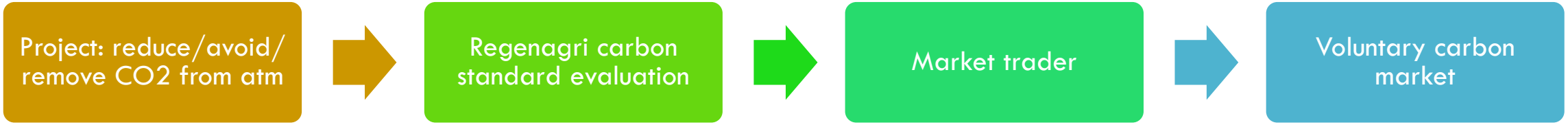
- In the context oif climate crisis and country commitment (NDC) to Paris Agreement to stay under 1.5 degree global warming, carbon credits are now used as a " climate finance tool" to help the adoption and implemtnation of new practices and technologies.

Carbon credit (CC) system



CARBON CREDITS: SCOPE AND PROCESS

Carbon credit process



- **Who can get CC:** Farmers – Farm-Group Manager– Supply chain Manager – any agricultural Stakeholder engage in a transition to regenerative systems and/or address their scope 3 emissions

- **When can get CC** Crediting period (10 or 15 years) VS Issuing period (at every verification event – TBD by the project developer)

- **What else?** Retroactive validation (up to 5 years prior to the PDD validation)
  BUT additionality still needs to be justified for these 5 years (Chapter 1.3)

BROAD TIME FRAME

Example: The timeframe required for regenagri program certification for a group with 1000 farmers

Activities	Timeframe
Baseline survey/gap assessment	6 days
Corrective actions: Mainly conducting trainings for farmers on various criterias of regenagri and its adoption	60 to 90 days
Internal review of farm group	5 to 6 days
Communication with CB and final certification audit	30 to 45 days

Timeframe for carbon program:

- The carbon credits can be calculated from the **second year** onward of regenagri certification program
- And this program will be evaluated independently.
- The carbon credit evaluation is data centric process and its time is solely depend on project development progress.