What is claimed is:

1. A method of carbon recording and trading performed with at least one block chain node, the method comprising:

obtaining, at the block chain node, use data corresponding to the use of a vehicle and a unique ID of the vehicle~~, wherein the use data includes at least one of a distance traveled by the vehicle or an amount of electrical energy consumed by the vehicle~~;

converting, by at least one smart contract executed by the block chain node, the use data to a carbon emission reduction value data, wherein the converting includes:

determining a baseline carbon emission amount, BE, corresponding to a use of a combustion engine vehicle according to the use data;

determining an actual carbon emission amount, PE, caused by the use of the vehicle according to the use data; and

subtracting PE ~~form~~ from BE;

performing a Hash operation on the carbon emission reduction value data to obtain a Hashed value of the carbon emission reduction value data;

~~writing, with the block chain node,~~ transmitting the Hashed value of the carbon emission reduction value data and the unique ID to a block chain ~~as a block chain transaction~~for storage;

generating, by the at least one smart contract, a carbon credit according to the carbon emission reduction value data; and

~~writing, with the block chain node,~~transmitting the carbon credit and the unique ID to the block chain ~~as a block chain transaction~~ for storage;

~~receiving, at the block chain node, a request for a transaction to purchase a good or service with the carbon credit; and~~

~~executing, with the at least one smart contract, a block chain transaction according to the request.~~

wherein the method further comprises storing, in a local memory or a database, the carbon emission reduction value data, the Hashed value of the carbon emission reduction value data and a list of correspondence between the carbon emission reduction value data

and the Hashed value of the carbon emission reduction value data.

~~2. The method of claim 1, wherein the writing the carbon emission reduction value and the unique ID to the block chain includes performing a Hash operation on the carbon emission reduction value to obtain a Hashed value of the carbon emission reduction value; and transmitting the Hashed value of the carbon emission reduction value to the block chain for storage.~~

~~3~~2. A method of carbon recording and trading performed with at least one block chain node, the method comprising:

obtaining, at the block chain node, use data corresponding to the use of a vehicle, and a unique ID of the vehicle~~, wherein the use data includes at least one of a distance traveled by the vehicle or an amount of electrical energy consumed by the vehicle~~;

obtaining, at the block chain node, an energy consumption amount by an entity, an emission source type, and a unique ID of the entity;

converting, by at least one smart contract executed by the block chain node, the use data to a carbon emission reduction value data, wherein the converting includes:

determining a baseline carbon emission amount, BE, corresponding to a use of a combustion engine vehicle according to the use data;

determining an actual carbon emission amount, PE, caused by the use of the vehicle according to the use data; and

subtracting PE ~~form~~ from BE;

performing a Hash operation on the carbon emission reduction value data to obtain a Hashed value of the carbon emission reduction value data;

converting, by the at least one smart contract executed by the block chain node, the energy consumption amount to a carbon emission value, wherein the converting includes:

determining an emission factor according to the emission source type, wherein the emission factor is a correlation between emission generation and consumption of the emission source type;

calculating a carbon emission amount according to the energy consumption amount and the emission factor;

performing a Hash operation on the carbon emission amount to obtain a Hashed value of the carbon emission amount;

~~writing, with the block chain node,~~ transmitting the Hashed value of the carbon emission reduction value data and the Hashed value of the carbon emission ~~value~~amount to a block chain ~~as a block chain transaction~~ for storage;

generating, by the at least one smart contract, a carbon credit according to the carbon emission reduction value data;

writing, with the block chain node, the carbon credit and the vehicle unique ID to the block chain as a block chain transaction;

generating, by the at least one smart contract, a negative carbon credit according to the carbon emission value;

writing, with the block chain node, the negative carbon credit and the entity unique ID to the block chain as a block chain transaction;

receiving, at the block chain node, a request for a carbon credit trade between the vehicle and the entity to transfer the carbon credit to the entity; and

executing, with the at least one smart contract, a block chain transaction according to the request, wherein the executing includes updating the vehicle's and the entity's carbon credits on the block chain according to the block chain transaction.

wherein the method further comprises:

storing, in a local memory or a database, the carbon emission reduction value data, the Hashed value of the carbon emission reduction value data and a list of correspondence between the carbon emission reduction value data and the Hashed value of the carbon emission reduction value data.

~~4. The method of claim 3, wherein the writing the carbon emission reduction value and the vehicle unique ID to the block chain includes performing a Hash operation on the carbon emission reduction value to obtain a Hashed value of the carbon emission reduction~~

~~value; and transmitting the Hashed value of the carbon emission reduction value to the block chain platform for storage, further wherein the writing the carbon emission value and the entity unique ID to the block chain includes performing a Hash operation on the carbon emission value to obtain a Hashed value of the carbon emission value and transmitting the Hashed value of the carbon emission value to the block chain platform for storage.~~

~~5~~3. The method of any of claims 1-~~4~~2, wherein the vehicle includes at least one of a battery electric vehicle, a hybrid electric vehicle, or a bicycle.

~~6~~4. The method of any of claims 1-~~5~~3, wherein the use data is collected by an IoT sensor operably coupled to the vehicle and transmitted to the block chain node via a computing device located in the vehicle.

~~7~~5. The method of any of claims 1-~~6~~4, wherein the unique ID of the vehicle is at least one of a resident identification card number of a user of the vehicle, a mobile phone number of a user of the vehicle, a frame number of the vehicle, a license plate number of the vehicle, a hashed value of a resident identification card number of a user of the vehicle, a hashed value of a mobile phone number of a user of the vehicle, a hashed value of a frame number of the vehicle, or a hashed value of a license plate number of the vehicle.

~~8~~6. A block chain node for carbon recording and trading, comprising:

a processor; and

a memory containing computer readable instructions for causing the processor to perform operations~~, comprising:~~ according to any of claims 1-5.

~~obtaining use data corresponding to the use of an vehicle, and a unique ID of the vehicle, wherein the use data includes at least one of a distance traveled by the vehicle or an amount of electrical energy consumed by the vehicle;~~

converting, by at least one smart contract executed by the block chain node, the use data to a carbon emission reduction value, wherein the converting includes:

determining a baseline carbon emission amount, BE, corresponding to a use of a combustion engine vehicle according to the use data;

determining an actual carbon emission amount, PE, caused by the use of the vehicle according to the use data; and

subtracting PE form BE;

writing, with the block chain node, the carbon emission reduction value and the unique ID to a block chain as a block chain transaction;

generating, by the at least one smart contract, a carbon credit according to the carbon emission reduction value;

writing, with the block chain node, the carbon credit and the unique ID to the block chain as a block chain transaction;

receiving, at the block chain node, a request for a transaction to purchase a good or service with the carbon credit; and

executing, with the at least one smart contract, a block chain transaction according to the request.

9. The block chain node of claim 8, wherein the writing the carbon emission reduction value and the unique ID to the block chain includes performing a Hash operation on the carbon emission reduction value to obtain a Hashed value of the carbon emission reduction value; and transmitting the Hashed value of the carbon emission reduction value to the block chain for storage.

10. The block chain node of claim 8 or 9, wherein the vehicle includes at least one of a battery electric vehicle, a hybrid electric vehicle, or a bicycle.

11. The block chain node of any of claims 8-10, wherein the use data is collected by an IoT sensor operably coupled to the vehicle and transmitted to the block chain node via a

~~computing device located in the vehicle.~~

~~12. The block chain node of any of claims 8-11, wherein the unique ID is at least one of a resident identification card number of a user of the vehicle, a mobile phone number of a user of the vehicle, a frame number of the vehicle, a license plate number of the vehicle, a hashed value of a resident identification card number of a user of the vehicle, a hashed value of a mobile phone number of a user of the vehicle, a hashed value of a frame number of the vehicle, or a hashed value of a license plate number of the vehicle.~~