ZEP Advisory Council 59

5th June 2019

Agenda Item 10: Update on EU Taxonomy for Sustainable Finance

Sean Kidney and Graeme Sweeney will provide an oral update on work progress.

The slide set attached as pre-read 10.a. summarises the most recent thinking (at the time of writing) from the Energy Group. As outlined in the slides, activities are defined around a declining emissions threshold that achieves net-zero by 2050 and therefore avoids carbon lock-in.

Status of activities and screening criteria

Activity Description	NACE Code	Principle	Metric	Threshold
1. Production of Electricity	D.35.11	Y	Y	Y
2. Transmission & Distribution of Electricity	D.35.12 D.35.13	Y	Y	Y
3. Electricity Storage	NA	Y	Y	Y
4. Carbon Capture, Transportation and Storage	NA	Y	Y	Y
5. Gas Distribution	D.35.2	Y	Y	Y
6. Heating and Cooling	D.35.3	Y	NA	NA
7. Production of Bioenergy	D.35.2	NA	NA	NA

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Activity 1 – Production of Electricity (for reference only: replaced by individual technology slides)

NACE Level	**D.35.1: Electric power generation, transmission and distribution**
Code	D.35.11: Production of electricity
Description	Operation of generation facilities that produce electric energy, including nuclear and gas turbine.
Principle	• Support a transition to a net-zero emissions economy. • Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy. • Ensure that economic activities meet best practice standards • Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. • Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	**100 gCO2e/kWh, declining to 0 by 2050.** This threshold will be reduced every 5 years in line with a trajectory to zero net-CO2e in 2050. Assets and activities have to remain below the threshold as it declines to remain qualifying.

Additional Notes

- A common criteria for inclusion in the taxonomy is applicable for all generation technologies.
- *Unabated coal and gas will not meet threshold. Coal with CCS will not; gas with CCS might.*
- *An asset has to remain compliant across its life-time*
- *Mixed molecules – notably gas with hydrogen – will need to meet the threshold*
- Any electricity generation technology can be included in the taxonomy if it can be demonstrated, using a ISO 14044-compliant Life Cycle Assessment (LCA), that the life cycle impacts for producing 1 kWh of electricity are below a threshold of 100 g CO2 eq. *Note that MEASUREMENT of fugitive emissions is required, not estimation*
- LCA shall be applied on a project-basis, using project specific-data where relevant, and shall be subjected to critical review.

- The following technologies are **exempted from performing a full LCA** on the basis of existing reference LCA research:
  - Solar photovoltaic (PV)
  - Wind power
  - Existing hydropower *in the EU*
  - Existing geothermal *in the EU*
  - Ocean energy
  - Concentrated solar power (CSP).

The exemptions are subject to regular review in accordance with the declining threshold.

Activity 1 – Production of Electricity from Solar PV

NACE Level	D.35.1: Electric power generation, transmission and distribution
Code	D.35.11: Production of electricity
Description	Operation of electricity generation facilities that produce electricity from solar photovoltaic.
Principle	• Support a transition to a net-zero emissions economy. • Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy. • Ensure that economic activities meet best practice standards • Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. • Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	**100 gCO2e/kWh, declining to 0 by 2050.** This threshold will be reduced every 5 years in line with a trajectory to zero net-CO2e in 2050. Assets and activities must meet the threshold when the taxonomy approval is sought (wording needs to be refined – john sinner) Catchall is that after 2050, you have to meet the 2050 target.
Additional Notes	• **Exempt from performing a full LCA** on the basis of existing reference LCA research: • The exemptions are subject to regular review in accordance with the declining threshold.

Activity 1 – Production of Electricity from Wind Power

NACE Level	D.35.1: Electric power generation, transmission and distribution
Code	D.35.11: Production of electricity
Description	Operation of electricity generation facilities that produce electricity from wind power.
Principle	• Support a transition to a net-zero emissions economy. • Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy. • Ensure that economic activities meet best practice standards • Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. • Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	**100 gCO2e/kWh, declining to 0 by 2050.** This threshold will be reduced every 5 years in line with a trajectory to zero net-CO2e in 2050. Assets and activities must meet the threshold when the taxonomy approval is sought (wording needs to be refined – john sinner) Catchall is that after 2050, you have to meet the 2050 target.
Additional Notes	• **Exempt from performing a full LCA** on the basis of existing reference LCA research: • The exemptions are subject to regular review in accordance with the declining threshold.

Activity 1 – Production of Electricity from Concentrated Solar Power

NACE Level	D.35.1: Electric power generation, transmission and distribution
Code	D.35.11: Production of electricity
Description	Operation of electricity generation facilities that produce electricity from concentrated solar power.
Principle	• Support a transition to a net-zero emissions economy. • Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy. • Ensure that economic activities meet best practice standards • Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. • Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	**100 gCO2e/kWh, declining to 0 by 2050.** This threshold will be reduced every 5 years in line with a trajectory to zero net-CO2e in 2050. Assets and activities must meet the threshold when the taxonomy approval is sought (wording needs to be refined – john sinner) Catchall is that after 2050, you have to meet the 2050 target.
Additional Notes	• **Exempt from performing a full LCA** on the basis of existing reference LCA research: • The exemptions are subject to regular review in accordance with the declining threshold.

Activity 1 – Production of Electricity from Ocean Energy

NACE Level	D.35.1: Electric power generation, transmission and distribution
Code	D.35.11: Production of electricity
Description	Operation of electricity generation facilities that produce electricity from ocean energy.
Principle	• Support a transition to a net-zero emissions economy. • Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy. • Ensure that economic activities meet best practice standards • Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. • Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	**100 gCO2e/kWh, declining to 0 by 2050.** This threshold will be reduced every 5 years in line with a trajectory to zero net-CO2e in 2050. Assets and activities must meet the threshold when the taxonomy approval is sought (wording needs to be refined – john sinner) Catchall is that after 2050, you have to meet the 2050 target.
Additional Notes	• **Exempt from performing a full LCA** on the basis of existing reference LCA research: • The exemptions are subject to regular review in accordance with the declining threshold.

Activity 1 – Production of Electricity from Hydropower

NACE Level	D.35.1: Electric power generation, transmission and distribution
Code	D.35.11: Production of electricity
Description	Operation of electricity generation facilities that produce electricity from hydropower.
Principle	• Support a transition to a net-zero emissions economy. • Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy. • Ensure that economic activities meet best practice standards • Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. • Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	**100 gCO2e/kWh, declining to 0 by 2050.** This threshold will be reduced every 5 years in line with a trajectory to zero net-CO2e in 2050. Assets and activities must meet the threshold when the taxonomy approval is sought (wording needs to be refined – john sinner) Catchall is that after 2050, you have to meet the 2050 target.

Additional Notes

- **Existing Hydropower facilities within the EU are exempt from performing a full LCA** on the basis of existing reference LCA research:
  - Most emissions are upfront and the CO2 has already been emitted
  - The exemptions are subject to regular review in accordance with the declining threshold.
- Investments which improve the capacity of a hydropower facility, without enlarging the reservoir are compliant with the taxonomy.

Activity 1 – Production of Electricity from Geothermal

NACE Level	D.35.1: Electric power generation, transmission and distribution
Code	D.35.11: Production of electricity
Description	Operation of electricity generation facilities that produce electricity from geothermal energy.
Principle	• Support a transition to a net-zero emissions economy. • Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy. • Ensure that economic activities meet best practice standards • Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. • Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	**100 gCO2e/kWh, declining to 0 by 2050.** This threshold will be reduced every 5 years in line with a trajectory to zero net-CO2e in 2050. Assets and activities must meet the threshold when the taxonomy approval is sought (wording needs to be refined – john sinner) Catchall is that after 2050, you have to meet the 2050 target.

Additional Notes

- **Existing Geothermal facilities within the EU are exempt from performing a full LCA** on the basis of existing reference LCA research:
  - The exemptions are subject to regular review in accordance with the declining threshold.

Activity 1 – Production of Electricity from Nuclear Fission

NACE Level	D.35.1: Electric power generation, transmission and distribution
Code	D.35.11: Production of electricity
Description	Operation of electricity generation facilities that produce electricity from nuclear fission.
Principle	• Support a transition to a net-zero emissions economy. • Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy. • Ensure that economic activities meet best practice standards • Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. • Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	**100 gCO2e/kWh, declining to 0 by 2050.** This threshold will be reduced every 5 years in line with a trajectory to zero net-CO2e in 2050. Assets and activities must meet the threshold when the taxonomy approval is sought (wording needs to be refined – john sinner) Catchall is that after 2050, you have to meet the 2050 target.
Additional Notes	• Any electricity generation technology can be included in the taxonomy if it can be demonstrated, using a ISO 14044-compliant Life Cycle Assessment (LCA), that the life cycle impacts for producing 1 kWh of electricity are below a threshold of 100 g CO2 eq. • LCA shall be applied on a project-basis, using project specific-data where relevant, and shall be subjected to critical review.

Activity 1 – Production of Electricity from Nuclear Fusion

NACE Level	D.35.1: Electric power generation, transmission and distribution
Code	D.35.11: Production of electricity
Description	Operation of electricity generation facilities that produce electricity from nuclear fusion.
Principle	• Support a transition to a net-zero emissions economy. • Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy. • Ensure that economic activities meet best practice standards • Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. • Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	**100 gCO2e/kWh, declining to 0 by 2050.** This threshold will be reduced every 5 years in line with a trajectory to zero net-CO2e in 2050. Assets and activities must meet the threshold when the taxonomy approval is sought (wording needs to be refined – john sinner) Catchall is that after 2050, you have to meet the 2050 target.
Additional Notes	• Any electricity generation technology can be included in the taxonomy if it can be demonstrated, using a ISO 14044-compliant Life Cycle Assessment (LCA), that the life cycle impacts for producing 1 kWh of electricity are below a threshold of 100 g CO2 eq. • LCA shall be applied on a project-basis, using project specific-data where relevant, and shall be subjected to critical review.

Activity 1 – Production of Electricity from Gas Combustion

NACE Level	D.35.1: Electric power generation, transmission and distribution
Code	D.35.11: Production of electricity
Description	Operation of electricity generation facilities that produce electricity from gas combustion.
Principle	• Support a transition to a net-zero emissions economy. • Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy. • Ensure that economic activities meet best practice standards • Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. • Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	**100 gCO2e/kWh, declining to 0 by 2050.** This threshold will be reduced every 5 years in line with a trajectory to zero net-CO2e in 2050. Assets and activities must meet the threshold when the taxonomy approval is sought (wording needs to be refined – john sinner) Catchall is that after 2050, you have to meet the 2050 target.

Additional Notes

- *Mixed molecules – notably gas with hydrogen – will need to meet the threshold*
- Any electricity generation technology can be included in the taxonomy if it can be demonstrated, using a ISO 14044-compliant Life Cycle Assessment (LCA), that the life cycle impacts for producing 1 kWh of electricity are below a threshold of 100 g CO2 eq. *Note that MEASUREMENT of fugitive emissions is required, not estimation*
- LCA shall be applied on a project-basis, using project specific-data where relevant, and shall be subjected to critical review.

Implications:

- *Unabated gas will not meet threshold, gas with CCS might*
- *By 2050, 100% CCS will be required for taxonomy compliance*

Activity 2 – Transmission and Distribution of Electricity

NACE Level	D.35.1: Electric power generation, transmission and distribution
Code	D.35.12 & D.35.13: Transmission of Electricity & Distribution of Electricity
Description	Operation of transmission systems that convey the electricity from the generation facility to the distribution system Operation of distribution systems (i.e., consisting of lines, poles, meters, wiring, and transformers) that convey electric power received from the generation facility or the transmission system to the final consumer
Principle	If the **benefits linked to climate change mitigation are dominant** compared to other benefits, an investment can be considered as primarily driven by climate concerns, and therefore contributing to Climate Mitigation. **Investments in electricity T&D contribute to transforming the power system in line with EU climate mitigation efforts**, this can **be shown when the investment:** • Supports the integration of renewable energy into the power grid • Leads to significant GHG emissions reductions, from fuel switching or merit order optimisation, as a direct result of the investment • Decreases direct emissions from T&D infrastructure.
Threshold	• An investment that enables additional electricity generation from Taxonomy compliant (declining 100gCo2e/kWh threshold) energy sources: a) Constituting at least 51% of the total expected utilisation of the investment; or b) Equivalent to at least 15% full load equivalent of the capacity of the investment; or • An investment resulting in GHG emissions reductions at least as high as those that would result from the connection of an intermittent RES plant with the same capacity. (i.e. GHG emissions reductions equal to at least 230gCO2/MW of rated capacity of the investment, at a load factor of 15%); or • A 100% reduction direct greenhouse gas emissions from T&D infrastructure (i.e. replacement SF6 circuit breakers)

Additional Notes

List of always-green investments:

- Direct grid connections to RES
- Transformers that comply with the eco-design (2021) standards; third-generation smart meters.
- All (other) equipment where the main objective is an increase of the RE used (e.g. voltage control measures could allow more renewable infeed).
- Sensors, including meteo sensors for forecasting renewable production); automation of substations/feeders; control rooms; software that enable a better control of the grid (to face more unstable and more local generation from renewable) by sending information ***to system operators;*** management of >50% renewable micro grids
- Equipment to carry information ***to users*** for remotely acting on consumption (for adding flexibility through demand side management)

Activity 2 – Upgrade of T&D Systems Architecture

NACE Level	**D.35.1: Electric power generation, transmission and distribution**
Code	D.35.12 & D.35.13: Transmission of Electricity & Distribution of Electricity
Description	Upgrade of existing transmission & distribution infrastructure (excluding new capacity installation)
Principle	If the **benefits linked to climate change mitigation are dominant** compared to other benefits, an investment can be considered as primarily driven by climate concerns, and therefore contributing to Climate Mitigation. **Investments in electricity T&D contribute to transforming the power system in line with EU climate mitigation efforts**, this can **be shown when the investment:** • Supports the integration of renewable energy into the power grid • Leads to significant GHG emissions reductions, from fuel switching or merit order optimisation, as a direct result of the investment • Decreases direct emissions from T&D infrastructure.

Threshold	• Upgrades to T&D System Architecture which incorporates either:
	  • Third generation smart meters
	  • Equipment where the main objective is an increase of the RE used (e.g. voltage control measures to allow more renewable infeed)
	  • Sensors including meteo sensors for forecasting renewable production, automation of substations/feeders, control rooms and software that increase control of the grid; management of >50% renewable micro-grids
	  • Operation of smart meters and communication system
	  • Software and Equipment that enables Demand Side Management and improves control of the grid by delivering information to operators and to users for remotely acting on consumption or enables exchange of renewable electricity between users.

Additional Notes	
	~~**List of always green investments:**~~ ~~• Direct grid connections to RES~~ ~~• Transformers that comply with the eco-design (2021) standards; third-generation smart meters.~~ ~~• All (other) equipment where the main objective is an increase of the RE used (e.g. voltage control measures could allow more renewable infeed).~~ ~~• Sensors, including meteo sensors for forecasting renewable production); automation of substations/feeders; control rooms; software that enable a better control of the grid (to face more unstable and more local generation from renewable) by sending information **to system operators;** management of >50% renewable micro-grids.~~

Activity 3 – Storage of Electricity

NACE Level	**D.35.1: Electric power generation, transmission and distribution**
Code	D.35.1X: Storage of electricity
Description	Electricity storage describes the investment and operation of technologies and infrastructure that store electricity and/or renewable energy and return it at a later time, whether in the form of electricity or other energy vectors. - This formulation does not include Demand Side Management (load shedding and load shifting). This includes pumped hydro, compressed air, batteries, flywheels, thermal storage, supercapacitors, hydrogen storage facilities.
Principle	Investments in electricity storage in the electricity system must contribute to transforming the power system in line with EU climate mitigation efforts. This can be shown when the investment is show to support: • Power grid stabilisation, making best use of excess renewable energy. • The effective utilisation of peak generation renewable energy.
Threshold	**All investments in electricity storage are considered green by taxonomy, however:** • Any storage technology which uses hydrocarbons as a medium of storage is excluded.
Additional Notes	
	Hydrogen: • Infrastructure to store hydrogen is included. • Combustion of hydrogen as a fuel source is governed by the electricity generation emissions threshold. • Production of hydrogen as a fuel source is governed by the relevant manufacturing emissions thresholds.

Activity 4 – Carbon Capture and Storage (for reference only: replaced by following slides)

NACE Level	No Nace Code
Code	Carbon Capture and Storage
Description	Capture of anthropogenic emissions, transport of CO2, processing and preparation of CO2 for storage, sequestration of CO2
Principle	The activity provides substantial contribution to achieving net-zero GHG emissions target by 2050. The activity reduces net GHG emissions from economic activities and GHG concentrations in the atmosphere The activity leads to significant emissions reductions compared to BAU Ensure there is sufficient storage and sequestration capacity available to meet the rate of capture of CO2e.
Threshold	**Capture of anthropogenic emissions:** • Metrics that qualify the capture of anthropogenic emissions are determined by the threshold set for said economic activity. E.g. for electricity generation, the facility with CCS must meet the declining 100gCO2e/kWh threshold. **Transport of captured CO2:** • <0.5% leakage/tonne of CO2 transported from head of the pipeline to delivery. **Operation of a permanent CO2 storage facility:** • Compliant with DNV Storage Certification Framework, based on ISO 27914:2017 for geological storage of CO2.

Additional Notes

- For existing gas-fired power facilities, ONLY the portion of finance dedicated to the Carbon Capture retrofit is included.
- For greenfield CCGT facilities that integrate Carbon Capture technology, the entire facility may qualify.

- ISO/CD 27919-2 - Carbon dioxide capture -- Part 2: Evaluation procedure to assure and maintain stable performance of post-combustion CO2 capture plant integrated with a power plant
- ISO/CD 27920 - Carbon dioxide capture, transportation and geological storage (CCS) -- Quantification and Verification
- ISO/DTR 27921 - Carbon dioxide capture, transport and storage -- CO2 stream composition
- ISO/AWI TS 27924 - Lifecycle risk management for integrated CCS projects

Activity 4 – Direct Air Capture of CO2

NACE Level	No Nace Code
Code	Carbon Capture and Storage
Description	Capture of CO2 from the atmosphere.
Principle	The activity provides substantial contribution to achieving net-zero GHG emissions target by 2050. The activity reduces net GHG emissions from economic activities and GHG concentrations in the atmosphere The activity leads to significant emissions reductions compared to BAU Ensure there is sufficient storage and sequestration capacity available to meet the rate of capture of CO2e.
Threshold	**All investments in Direct Air Capture operations are considered green by taxonomy.**

Additional Notes

- ISO/CD 27919-2 - Carbon dioxide capture -- Part 2: Evaluation procedure to assure and maintain stable performance of post-combustion CO2 capture plant integrated with a power plant
- ISO/CD 27920 - Carbon dioxide capture, transportation and geological storage (CCS) -- Quantification and Verification
- ISO/DTR 27921 - Carbon dioxide capture, transport and storage -- CO2 stream composition
- ISO/AWI TS 27924 - Lifecycle risk management for integrated CCS projects

Activity 4 – Capture of Anthropogenic Emissions

NACE Level	No Nace Code
Code	Carbon Capture and Storage
Description	Capture of anthropogenic emissions, transport of CO2, processing and preparation of CO2 for storage, sequestration of CO2
Principle	The activity provides substantial contribution to achieving net-zero GHG emissions target by 2050. The activity reduces net GHG emissions from economic activities and GHG concentrations in the atmosphere The activity leads to significant emissions reductions compared to BAU Ensure there is sufficient storage and sequestration capacity available to meet the rate of capture of CO2e.
Threshold	**Capture of anthropogenic emissions:** • Metrics that qualify the capture of anthropogenic emissions are determined by the threshold set for said economic activity. E.g. for electricity generation, the facility with CCS must meet the declining 100gCO2e/kWh threshold. Investments in CO2 capture technology (excluding Direct Air Capture), must also show that the captured CO2 is offloaded to Taxonomy compliant CO2 transportation and storage operations.
Additional Notes	- ISO/CD 27919-2 - Carbon dioxide capture -- Part 2: Evaluation procedure to assure and maintain stable performance of post-combustion CO2 capture plant integrated with a power plant - ISO/CD 27920 - Carbon dioxide capture, transportation and geological storage (CCS) -- Quantification and Verification - ISO/DTR 27921 - Carbon dioxide capture, transport and storage -- CO2 stream composition - ISO/AWI TS 27924 - Lifecycle risk management for integrated CCS projects

Activity 4 – Transportation of Captured CO2

NACE Level	No Nace Code
Code	Carbon Capture and Storage
Description	Capture of anthropogenic emissions, transport of CO2, processing and preparation of CO2 for storage, sequestration of CO2
Principle	The activity provides substantial contribution to achieving net-zero GHG emissions target by 2050. The activity reduces net GHG emissions from economic activities and GHG concentrations in the atmosphere The activity leads to significant emissions reductions compared to BAU Ensure there is sufficient storage and sequestration capacity available to meet the rate of capture of CO2e.
Threshold	**Transport of captured CO2:** • <0.5% leakage/tonne of CO2 transported from head of the pipeline to delivery at sequestration site.
Additional Notes	- ISO/CD 27919-2 - Carbon dioxide capture -- Part 2: Evaluation procedure to assure and maintain stable performance of post-combustion CO2 capture plant integrated with a power plant - ISO/CD 27920 - Carbon dioxide capture, transportation and geological storage (CCS) -- Quantification and Verification - ISO/DTR 27921 - Carbon dioxide capture, transport and storage -- CO2 stream composition - ISO/AWI TS 27924 - Lifecycle risk management for integrated CCS projects

Activity 4 – Permanent Sequestration of Captured CO2

NACE Level	No Nace Code
Code	Carbon Capture and Storage
Description	Capture of anthropogenic emissions, transport of CO2, processing and preparation of CO2 for storage, sequestration of CO2
Principle	The activity provides substantial contribution to achieving net-zero GHG emissions target by 2050. The activity reduces net GHG emissions from economic activities and GHG concentrations in the atmosphere The activity leads to significant emissions reductions compared to BAU Ensure there is sufficient storage and sequestration capacity available to meet the rate of capture of CO2e.
Threshold	**Operation of a permanent CO2 storage facility:** • Compliant with DNV Storage Certification Framework, based on ISO 27914:2017 for geological storage of CO2.
Additional Notes	This requirement will be reviewed periodically, and updated when the pending ISO standards are published. - ISO/CD 27919-2 - Carbon dioxide capture -- Part 2: Evaluation procedure to assure and maintain stable performance of post-combustion CO2 capture plant integrated with a power plant - ISO/CD 27920 - Carbon dioxide capture, transportation and geological storage (CCS) -- Quantification and Verification - ISO/DTR 27921 - Carbon dioxide capture, transport and storage -- CO2 stream composition - ISO/AWI TS 27924 - Lifecycle risk management for integrated CCS projects

Activity 5 – Upgrade of Gas Transmission and Distribution Networks

NACE Level	D.35.2: Manufacture of gas; distribution of gaseous fuels through mains H.49.5: Transport via pipeline
Code	D.35.22: Distribution of gaseous fuels through mains H.49.50: Transport of gases via pipelines
Description	Distribution and supply of gaseous fuels of all kinds through a system of mains Long-distance transportation of gases by pipelines
Principle	Support the integration of hydrogen and other low-carbon gases into the gas transmission and distribution system Lead to significant GHG emissions reductions by increasing the volume of hydrogen and other low-carbon gases use in the gas system Efficiency and loss reduction should NOT be eligible by default unless significant. There are investments that can result in CO2 savings without loss reduction.
Threshold	**Gas transmission and distribution network investments whose main purpose is the integration of hydrogen and other low-carbon gases are compliant with the taxonomy.** • Any gas transmission or distribution network investment which enables the network to increase the blend of hydrogen in the gas system is included. • The repair of existing gas pipelines is included *IF* the pipelines are hydrogen-ready. Implication: repairs to plastic pipelines can be included, but not to metal pipes.
Additional Notes	• No gas network expansion is eligible

Activity 6 – Cogeneration of Combined Heat and Power from Geothermal

NACE Level	Steam and air conditioning supply
Code	D.35.3: Steam and air conditioning supply
Description	Cogeneration of heat and electricity from geothermal
Principle	Support a transition to a net-zero emissions economy Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy Ensure that economic activities meet best practice standards Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	**Generation of Heat and Cooling:** • 30g Co2e/kWh for thermal and 100g CO2e/kWh for electricity For heating and cooling, assuming operation of a heat pump with a co-efficiency of performance of 3.33 in an electricity system aligned with the threshold in D.35.11. If a CHP plant produces electricity and heat, it should apply both the electricity threshold and the heat threshold. *This weighted threshold is calculated from the power to heat ratio (PtH) of the plant: [(30+PtH * 100)/(1+PtH)] CO2e/kWh (th+e).* Then you have them create a combined rate in accordance with the plant's power to heat ratio, which gives you the overall emissions threshold. This should be something between 30g and 100g. We're combining both outputs to measure the overall compliance of a plant.
Additional Notes	

Activity 6 – Cogeneration of Combined Heat and Power from Bioenergy

NACE Level	Steam and air conditioning supply
Code	D.35.3: Steam and air conditioning supply
Description	Cogeneration of heat and electricity from bioenergy
Principle	Support a transition to a net-zero emissions economy Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy Ensure that economic activities meet best practice standards Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	**Generation of Heat and Cooling:** • 30g Co2e/kWh for thermal and 100g CO2e/kWh for electricity For heating and cooling, assuming operation of a heat pump with a co-efficiency of performance of 3.33 in an electricity system aligned with the threshold in D.35.11. If a CHP plant produces electricity and heat, it should apply both the electricity threshold and the heat threshold. *This weighted threshold is calculated from the power to heat ratio (PtH) of the plant: [(30+PtH * 100)/(1+PtH)] CO2e/kWh (th+e).* Then you have them create a combined rate in accordance with the plant's power to heat ratio, which gives you the overall emissions threshold. This should be something between 30g and 100g. We're combining both outputs to measure the overall compliance of a plant.
Additional Notes	

Activity 6 – Cogeneration of Combined Heat and Power from Gas Combustion

NACE Level	Steam and air conditioning supply
Code	D.35.3: Steam and air conditioning supply
Description	Cogeneration of heat and electricity from gas-fired power plants
Principle	Support a transition to a net-zero emissions economy Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy Ensure that economic activities meet best practice standards Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	**Generation of Heat and Cooling:** • 30g Co2e/kWh for thermal and 100g CO2e/kWh for electricity For heating and cooling, assuming operation of a heat pump with a co-efficiency of performance of 3.33 in an electricity system aligned with the threshold in D.35.11. If a CHP plant produces electricity and heat, it should apply both the electricity threshold and the heat threshold. *This weighted threshold is calculated from the power to heat ratio (PtH) of the plant: [(30+PtH * 100)/(1+PtH)] CO2e/kWh (th+e).* Then you have them create a combined rate in accordance with the plant's power to heat ratio, which gives you the overall emissions threshold. This should be something between 30g and 100g. We're combining both outputs to measure the overall compliance of a plant.
Additional Notes	• For existing gas-fired power facilities, ONLY the portion of finance dedicated to the Carbon Capture retrofit is included. • For greenfield gas-fired facilities that integrate Carbon Capture technology, the entire facility may qualify.

Activity 6 – District Heating and Cooling Distribution

NACE Level	Steam and air conditioning supply
Code	D.35.3: Steam and air conditioning supply
Description	Distribution of combined heat and cooling
Principle	Support a transition to a net-zero emissions economy Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy Ensure that economic activities meet best practice standards Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	• Efficient* district heating/cooling distribution is taxonomy-compliant * As defined by the EU Energy Efficiency Directive
Additional Notes	• This essentially means that the pipes and infrastructure for distributing district heating and cooling

Activity 6 – Operation of Electric Heat Pumps

NACE Level	Steam and air conditioning supply
Code	D.35.3: Steam and air conditioning supply
Description	Operation of electric heat pumps
Principle	Support a transition to a net-zero emissions economy Avoidance of lock-in to technologies which do not support the transition to a net-zero emissions economy Ensure that economic activities meet best practice standards Ensure equal comparability within an economic activity with regards to achieving net-zero emissions economy target. Where necessary, incorporating technology-specific considerations into secondary metrics and thresholds.
Threshold	• Electric heat pumps are eligible under the taxonomy if using climate friendly refrigerant (GWP <10)

Additional Notes

- For industrial heatpumps there is a new HFO on the market in addition to water and ammonia (all GWP <10). For the residential heatpumps we know that R32 (GWP (global warming potential) of 675) is now on offer by several manufacturers (should already be around 10-15% of the market); R290 (GWP of 3) is being introduced. For reference, the "standard" gases are GWP in thousands.
- For background: https://ec.europa.eu/clima/policies/f-gas/alternatives_en

Activity 7 – Manufacture of Biogas for electricity generation

NACE Level	Manufacture of Gas
Code	D.35.21: Manufacture of gas
Description	Production of Biogas and Biofuel for electricity production
Principle	• Usual electricity threshold will apply • Reduce the risk of indirect land use impact (iLUC). • All bioenergy used should be produced from feedstocks that will deliver climate benefits compared to fossil fuels.
Threshold	Facilities producing biofuel and biogas for electricity production: 11.1gCO2e/MJ. Facilities producing biofuel and biogas for heating and co-generation: 16.0gCO2e/MJ. Bioenergy facilities must either: - Be certified under the RSB low indirect land use change (iLUC) optional module to demonstrate that they have low indirect land use impact; or - Provide evidence and documentation to demonstrate that they meet low iLUC risk biomass criteria and compliance indicators under the RSB optional module, i.e. yield increase, unused/degraded land, use of waste/residues.

Additional Notes

Forest-based feedstocks are an issue. Two options still being discussed:

A. For forest-based feedstock, **the source must be identified along with a forest management plan** or equivalent documentation to demonstrate that the forest unit where the feedstock is sourced is managed with the aim of retaining or increasing carbon stocks. *(Based on Sustainability Requirements for Solid Biomass in Netherlands)*. E.g. carbon stocks must be monitored over the entire harvest area using continuous forest inventory plot measurements ensuring that the carbon stock does not decline over a 10 year period.

B. Facilities using solid biomass (e.g. woodchips, wood pellets) are **eligible only to the extent that the biomass they use is of EU origin** (until further work is done in a later stage of taxonomy development).

Activity 7 – Manufacture of Biofuel for transport

NACE Level	Manufacture of Gas
Code	D.35.21: Manufacture of gas
Description	Production of Biogas and Biofuel for electricity production
Principle	• Usual electricity threshold will apply • Reduce the risk of indirect land use impact (iLUC). • All bioenergy used should be produced from feedstocks that will deliver climate benefits compared to fossil fuels.
Threshold	Facilities producing biofuel for transport: 18.8gCO2e/MJ. Bioenergy facilities must either: - Be certified under the RSB low indirect land use change (iLUC) optional module to demonstrate that they have low indirect land use impact; or - Provide evidence and documentation to demonstrate that they meet low iLUC risk biomass criteria and compliance indicators under the RSB optional module, i.e. yield increase, unused/degraded land, use of waste/residues.

Additional Notes

Forest-based feedstocks are an issue. Two options still being discussed:

A. For forest-based feedstock, **the source must be identified along with a forest management plan** or equivalent documentation to demonstrate that the forest unit where the feedstock is sourced is managed with the aim of retaining or increasing carbon stocks. *(Based on Sustainability Requirements for Solid Biomass in Netherlands)*. E.g. carbon stocks must be monitored over the entire harvest area using continuous forest inventory plot measurements ensuring that the carbon stock does not decline over a 10 year period.

B. Facilities using solid biomass (e.g. woodchips, wood pellets) are **eligible only to the extent that the biomass they use is of EU origin** (until further work is done in a later stage of taxonomy development).