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Secured transactions: Preparation of Protocols to the Cape Town Convention

Offshore wind power generation and similar equipment

(prepared by the Secretariat)

Summary	*Additional research on the legal and economic viability of a Protocol to the Cape Town Convention on offshore wind power generation equipment*
Action to be taken	*Note the document, decide whether the Secretariat should conduct additional research on the viability of a Protocol to the Cape Town Convention on renewable energy equipment*
Mandate	*Work Programme 2014-2016*
Priority level	*Low*
Related documents	*UNIDROIT 2013 – C.D. (92) 5 (d); UNIDROIT 2016 – C.D. (95) 13 rev. (pp. 12-13)*

INTRODUCTION

1. The *Convention on International Interests in Mobile Equipment* was opened for signature on 16 November 2001. Article 2(3) of the Convention provides that the initial three Protocols, adopted respectively in 2001, 2007 and 2012, should cover aircraft, railway rolling stock and space assets. Article 51(2) of the Convention specifically contemplates the possibility of adopting additional Protocols which cover other categories of equipment.

2. On 10 September 2011, the Secretariat received a proposal from the German Federal Ministry of Justice to consider the preparation of an additional Protocol to the Cape Town Convention on matters specific to offshore wind power generation and similar equipment. German private industry had expressed interest in creating a system for the registration of security interests in wind-energy equipment. The growth of the market for renewable energies was said to create a significant need for large-scale investment, which could be facilitated through the availability of effective proprietary security rights. The German Federal Ministry of Justice expressed its support for the preparation of an international instrument with harmonised rules on proprietary security for such equipment.

3. In response to the German proposal, the Secretariat prepared a paper on 'offshore wind power generation and similar equipment'[1] for consideration by the Governing Council at its 92nd session (Rome, 8-10 May, 2013). The document considered the main legal concerns faced by industry engaged in cross-border trade and use of wind power generation equipment, economic data, whether existing legal solutions could address the industry's concerns and the suitability of the Cape Town Convention system for application to offshore power generation and similar equipment (UNIDROIT 2013 – C.D. (92) 5 (c)/(d)).

4. The Secretariat paper concluded that there was considerable legal uncertainty as to the applicable law for the determination of security interests in offshore wind energy installations, and that a Protocol to the Cape Town Convention covering offshore power generation and similar equipment could be a suitable solution to address the existing legal issues.

5. In discussing the Secretariat's paper, Governing Council members agreed that there were significant legal issues to be addressed in the financing of this type of equipment, but opinions varied on whether the Cape Town Convention system could be tailored to provide adequate solutions. The Governing Council subsequently agreed to include the project in the Work Programme for the triennium 2014 – 2016 as a low priority, and instructed the Secretariat to prepare a further study to determine whether an additional Protocol would be feasible. At its 72nd session (Rome, 5 December 2013) the General Assembly accepted the Governing Council's proposal to include the project as a low priority on the 2014-2016 Work Programme (UNIDROIT 2013 – A.G. (72) 9).

6. This document builds upon the initial legal analysis to provide further information on the economic and legal viability of an additional Protocol. The paper concludes that broadening the scope of a potential additional Protocol to cover renewable energy equipment rather than just offshore wind energy equipment would improve the economic viability and the likely number of ratifications of an additional Protocol.

I. OFFSHORE WIND ENERGY EQUIPMENT

7. As explained in the original research paper prepared by the Secretariat, a large variety of technical equipment and installations are used in offshore power generation. The most common type of offshore wind energy installation are wind turbines built as fixed structures, either on a monopile (single column) base, or based upon a tripod piled structure, the latter type of construction allowing the offshore structure to be erected in deeper waters than the former.

8. In shallower waters, gravity base structures can be used, where there is no fixed connection between the wind energy installation and the seabed: instead, the weight of the wind turbine's base keeps the structure in place. Floating wind turbines are wind turbines mounted on floating structures moored to the seabed. These wind turbines can be used in areas where the depth of the water renders fixed structures a technical or economic impossibility.

9. In the course of just a few decades, the generation of electricity by offshore wind power installations has undergone significant technological improvement and is now widely regarded as being a potential major contributor to the energy supply of many coastal economies, particularly in view of the growing demand for renewable energy. Global wind capacity is increasing at a rapid

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[1] See UNIDROIT, Governing Council, 92nd meeting (Rome 8 – 10 May 2013) – (http://www.unidroit.org/english/governments/councildocuments/2013session/cd92-05cd-e.pdf).

pace. In 2015 global wind capacity was 432.6 Gigawatts (GW), a 17% increase over 2014 levels and a 33% increase over 2013 levels.[2]

10. While the drive for the increased usage of wind energy is a global trend, Europe remains the leading region in improving capacity. As consistent with the 2009 Renewable Directive[3] under which the European Union set a cumulative renewable energy consumption target of 20%, estimates expect the European market for offshore wind energy to grow by 80 GW by 2020, to become a 100 billion euro industry.[4] The global increase in capacity is also due in part to the substantial rise of China's wind power market that individually increased global wind capacity by 30.5 GW in 2015.[5]

11. Driven by the significant increases in demand, the equipment manufacturing is estimated to reach a value of around $94 billion by year 2030.[6] The wind tower market, in particular tubular steel towers, is expected to pass $19 billion by 2019.[7] Furthermore, the market for wind turbine rotor blade is predicted to experience an annual growth rate of 17% from 2015 to 2019.[8] Correspondingly, to finance the acquisition of this expensive equipment, investment in wind farms as one of the leading sources of renewable energy generation is also rising at rapid rates.

12. Despite these strong growth trends, the current rapid uptake in offshore wind generation projects remains primarily a European phenomenon. At present, more than 91% (8,045 MW) of all off-shore wind installations can be found in European waters; mainly in the North Sea, Atlantic Ocean and in the Baltic Sea.[9] The rise in the Chinese energy market of wind generated power noted above has been primarily onshore. Africa and South America are not yet significantly involved in offshore wind electricity.

13. While governments outside of Europe have set ambitious targets for offshore wind and development is starting to increase in China, Japan, South Korea, Taiwan and the US,[10] the utility of such an energy source will always be limited to coastal States with the prevailing geographical conditions. Taking such geographical limitations into consideration, a Protocol to the Cape Town Convention covering only offshore wind power generation equipment is unlikely to ever being able to achieve near-universal adoption. A Protocol ratified by only a few dozen States would not have the effectiveness of a Protocol with high levels of ratifications such as the Aircraft Protocol. Further, a Protocol with only limited ratifications and covering limited economic activity may not attract enough international registrations of the electronic registry itself to be economically viable.

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2 EurObserv'ER, Wind Enerby Baromer 2016 (www.eurobserv-er.org/pdf/wind-energy-barometer-2016-en/); Global Trends in Renewable Energy Investment 2016, Frankfurt School - UNEP Collaborating Centre for Climate and Sustainable Energy Finance - Bloomberg New Energy Finance, 2016. p.14.

3 Directive 2009/28/EC by the European Union - http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2009:140:FULL&from=EN.

4 See the compiled data in WAB Windenergy Agency, Industry Report 2011, available under http://www.wab.net/images/stories/PDF/broschueren/WAB_Industry__Report_2011.pdf.

5 EurObserv'ER, Wind Enerby Baromer 2016 (www.eurobserv-er.org/pdf/wind-energy-barometer-2016-en/).

6 Global wind power equipment manufacturing market value 2003-2030, Statista (http://www.statista.com/statistics/217174/global-projected-growth-of-wind-power-by-2020/).

7 See http://www.renewableenergyworld.com/articles/2015/12/wind-tower-market-values-will-pass-19b-by-2019.html.

8 Ibid.

9 See Global Wind Statistics 2015, p. 4, by the Global Wind Energy Council - http://www.gwec.net/wp-content/uploads/vip/GWEC-PRstats-2015_LR.pdf.

10 Ibid.

14. The underlying rationale behind the original German proposal was, in part, that the offshore nature of wind generation equipment posed particular legal challenges that made it an especially appropriate area of expansion for the Cape Town Convention. While there is merit in such an argument, if issues exist in the financing of all renewable energy equipment that could be remedied by an additional Protocol to the Cape Town Convention, then the additional Protocol should also cover onshore equipment as well as other types of renewable energy equipment.

15. It is proposed that an additional Protocol covering renewable energy equipment more broadly, including offshore wind equipment, tailored effectively to target high value equipment, would be a more universally useful and economically viable project. The remainder of this document will further consider issues surrounding the creation of such a Protocol.

II. RENEWABLE ENERGY

16. Renewable energy is defined by the International Energy Agency (IEA) as 'derived from natural processes that are replenished constantly'. Under this definition, renewable energy includes (i) wind power (on-shore and off-shore), (ii) solar power (photovoltaic and thermal), (iii) hydroelectric power, (iv) geothermal energy and (v) biomass.

17. Solar thermal technology generates electricity through the sun's thermal radiation. Solar power plants use one of two technologies: photovoltaic systems (PV) or concentrating solar plants (CPS). A solar PV power system consists of an arrangement of several components, including solar panels to absorb and convert sunlight into electricity, a solar inverter to change the electric current from DC to AC, as well as mounting, cabling and other electrical accessories to set up a working system. It may also use a solar tracking system to improve the system's overall performance and an integrated battery solution to store the energy produced. CPS systems use solar thermal energy to produce stream and convert into electricity by a turbine, which requires mirrors or lenses and heat engine steam turbines.

18. Hydroelectric power (also called water or marine power) generates electricity through the energy produced by falling water or fast-running water. The main types of hydroelectric power are run-of-river, storage (such as dams) and off-shore (including tidal, wave and current power). According to the International Renewable Energy Agency (IRENA), hydroelectric power will be a major source of renewable energy production by 2030.[11]

19. Geothermal energy is thermal energy generated and stored in the Earth. The geothermal gradient (the difference in temperature between the core of the planet and its surface) drives a continuous conduction of thermal energy in the form of heat from the core to the surface, which can be converted into electricity. Geothermal power is cost effective, reliable, sustainable, and environmentally friendly, but has historically been limited to areas near tectonic plate boundaries. Recent technological advances have dramatically expanded the range and size of viable resources, opening a potential for widespread exploitation.

20. Biomass power is carbon neutral electricity generated from renewable organic waste that would otherwise be dumped in landfills or openly burned. As an energy source, biomass can either be used directly via combustion to produce heat, or indirectly after converting it to various forms of biofuel. Conversion of biomass to biofuel can be achieved by different methods which are broadly classified into: thermal, chemical, and biochemical methods. The equipment required depends upon either dry (combustion, pyrolysis) or wet process (anaerobic digestion, gasification, fermentation).

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[11] IRENA – Remap 2030 - A background paper to "Renewable Energy in Manufacturing", March 2015.

III. POTENTIAL BENEFITS OF A RENEWABLE ENERGY EQUIPMENT PROTOCOL

21. There are four possible notable benefits of a future Protocol on renewable energy equipment: (A.) increased utility and effectiveness, (B.) growth, (C.) timing and political will and (D.) value of prior Protocols.

A. Utility and effectiveness

22. As alluded to above, the main benefit of a renewable energy equipment Protocol is that the broader scope would increase its utility and effectiveness for a larger number of countries. While offshore power generation remains limited to countries which possess the requisite geographical conditions, most countries in the world are able to utilise at least one type of renewable energy. In 2015, the 10 countries making the largest investments in renewable energy (Brazil, Chile, China, Germany, India, Japan, Mexico, South Africa, the United Kingdom and the United States of America) are from diverse regions from across the globe.[12]

23. PV solar power is the widely utilised renewable energy source globally, with 20 countries across all regions in the world now having a cumulative capacity of more than one gigawatt, including Australia, Chile, China, Japan, Korea, Malaysia, the Philippines, South Africa and Thailand.[13] The available solar PV capacity in Italy, Germany and Greece is sufficient to supply between 7% and 8% of their respective domestic electricity consumption.[14] Similarly, hydropower is increasingly utilised globally, especially in developing markets including South America (Brazil and Venezuela) and Africa (Ethiopia, Guinea and Zambia).[15]

24. A renewable energy equipment Protocol that facilitated investment in all types of renewable energy equipment could be useful to a larger number of countries. The potentially larger number of ratifications of such a Protocol would further increase its utility, as higher numbers of Contracting States increase the strength and protection that an internationally registered interest under the Protocol enjoys.

B. Growth

25. The development of a renewable energy equipment Protocol might facilitate investment in an area of economic activity which is already significant, and is forecast to grow significantly in coming years. Renewable energy investment rates grew 700% between 2004 and 2011[16] with these growth trends likely to increase. According to the United Nation Environment Programmes' 10th *Global Trends in Renewable Energy Investment 2016*[17] investments in renewables totalled $286 billion in 2015. Global investment in renewable energy and efficiency equipment is further forecast to continue to grow, reaching an estimated $28 trillion by the year 2035.[18]

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[12] Global trends in renewable energy investment, 2016, by FS-UNEC Collaborating Center (http://fs-unep-centre.org/sites/default/files/publications/globaltrendsinrenewableenergyinvestment2016lowres_0.pdf).

[13] See IEA Report 'A Snapshot of Global PV', p. 3 www.iea-pvps.org/index.php?id=92&eID=dam_frontend_push&docID=2430.

[14] See IEA Report 'A Snapshot of Global PV', p. 5 and 6 www.iea-pvps.org/index.php?id=92&eID=dam_frontend_push&docID=2430.

[15] See International Hydropower Association (https://www.hydropower.org/blog/33-gw-new-hydropower-capacity-commissioned-worldwide-in-2015#sthash.IHyjziUs.dpuf).

[16] World Energy Perspective: Cost of energy technologies, World Energy Council & Bloomberg New Energy Finance, 2013, p. 9.

[17] Prepared by the Frankfurt School-UNEP Collaborating Centre for Climate & Sustainable Energy Finance and Bloomberg New Energy Finance, the United Nations Environment Programme (UNEP) and Bloomberg New Energy Finance.

[18] Zero Carbon Australia: Renewable Energy Superpower, Beyond Zero Emission (BZE) 2015.

26. Another factor that could affect electricity demand over the next 25 years is the growth of electric vehicle sales. Production of electric cars increased 60% in 2015 to a new record of 462,000 sold items.[19] Electric vehicles, via the recharging of their batteries, will increase the demand for electricity, which will be increasingly produced from renewable sources (coal and gas-fired electricity generation drew less than half the investment made in solar, wind and other renewables capacity in 2015).[20]

C. Timing and political will

27. Regardless of legal merit, the success of any international instrument depends on the timing of its development and whether it is politically attractive for ratification at the time of its creation. Given recent international developments on cooperation to combat climate change, the development of a renewable energy equipment Protocol would be particularly appropriate to include on the forward work programme of UNIDROIT.

28. The 21st annual session of the Conference of the Parties (COP21) was held in Paris between 30 November and 12 December 2015. At the close of the Conference 195 countries adopted the first ever universal, legally binding climate change agreement (the Paris Agreement under the United Nations Framework Convention on Climate Change). The Paris Agreement sets out a global action plan to avoid dangerous climate change by limiting global warming to well below 2°C and is due to enter into force in 2020. The agreement was recently signed on 22 April 2016 by 175 states, 15 of which immediately ratified it.

29. The agreement binds Contracting States to a long-term goal of keeping the increase in global average temperature to well below 2°C above pre-industrial levels and to aim to limit the increase to 1.5°C. In pursuit of this goal, developed countries have also agreed on a plan to support climate action by mobilising $100 billion per year by 2020 (the Green Climate Fund) to aid developing countries for implementing new procedures to minimize climate change.

30. This breakthrough international agreement, and its associated commitments to aid developing countries with developing renewable energy technologies has created a very positive international political environment to develop instruments and tools that would contribute to the aims of the Paris Agreement. As an international instrument that would significantly contribute to the financing of renewable energy projects worldwide, an additional Protocol to the Cape Town Convention on matters specific to renewable energy equipment would contribute to the goals of the Paris Agreement and the international effort to combat climate change.

D. Value of previous Protocols to the Cape Town Convention

31. The Cape Town Convention has a proven successful track record in reducing risk and lowering financing costs in the aviation industry through the Aircraft Protocol. Subsequent Protocols have, where possible, mirrored the language and legal substance of the corresponding provisions of the Aircraft Protocol. Most articles are almost identical to previous Protocols. For example, the articles governing representative capacities, insolvency remedies, waivers of sovereign immunity, territorial units, signature, ratification, acceptance, approval or accession and the articles governing declarations mirror the corresponding provisions of the previous Protocols.

[19] Global trends in renewable energy investment, 2016, by FS-UNEC Collaborating Center (http://fs-unep-centre.org/sites/default/files/publications/globaltrendsinrenewableenergyinvestment2016lowres_0.pdf Ibid.

[20] Ibid.

32. The structure and legal mechanisms for a future Protocol on renewable energy equipment could largely draw from the existing Protocols to the Cape Town Convention. The Protocol would only need to diverge where the financing, acquisition and use of renewable energy equipment require a new approach to be developed.

33. The preliminary draft fourth Protocol to the Cape Town Convention on matters specific to agricultural, construction and mining equipment (MAC Protocol) may also provide some additional guidance on issues that have relevance in the renewable energy context. For example, to limit its scope, the draft MAC Protocol uses the Harmonized Commodity Description and Coding System (HS System) to identify the types of agricultural, construction and mining equipment it will cover. The annexes to the preliminary draft Protocol list the HS codes that cover the types of equipment which fall within the scope of the Protocol. Use of the HS System to define the scope of the preliminary draft Protocol ensures that the Protocol will apply to high value equipment used primarily in the agriculture, construction and mining industries.

34. It is anticipated that a renewable energy equipment Protocol would apply to equipment only used to generate and store renewable energy (as opposed to equipment used to manufacture, install or transport). As such, the Protocol could utilise the HS System to limit the scope of the renewable energy equipment Protocol to equipment only used to generate equipment. Appendix A to this document contains a list of HS codes that relate exclusively to renewable energy equipment (this list is illustrative only and is not an exhaustive categorisation of renewable energy equipment HS codes). Further, a future renewable energy equipment Protocol could also use the MAC Protocol approach of incorporating different annexes for different types of equipment (for example, a future renewable energy equipment Protocol could have five annexes: Annex 1 could cover wind power equipment, Annex 2 solar power equipment, Annex 3 hydroelectric power equipment, Annex 4 geothermal energy and Annex 5 biomass equipment).

35. The MAC Protocol also contains a provision addressing the relationship between international interests in equipment under the Protocol and domestic interests arising out of the equipment's affixation or use on immovable property (see Article VII of the preliminary draft MAC Protocol). This issue would also arise in relation to renewable energy equipment. As such, the approach of the MAC Protocol in resolving this difficult issue could also be adopted by a renewable energy equipment Protocol without the need to develop a whole new approach to the matter.

IV. POTENTIAL CHALLENGES

36. Further preliminary work needs to be completed to fully assess the viability of a renewable energy equipment Protocol, as several significant issues have not been addressed by this initial document.

37. Primarily, further research needs to be completed on the equipment itself, to determine whether there are complete, individual types of renewable energy equipment that would meet the criteria under Article 51(2) of the Cape Town Convention of being of high value, mobile and uniquely identifiable equipment. It is important that the scope of a future Protocol would only apply to high value renewable energy equipment utilised for commercial production rather than small pieces of renewable energy equipment use domestically (for example, solar panels on the roof of a residential property).

38. It also needs to be determined whether there is industry practice of asset-based financing for renewable energy equipment. If renewable energy investments are financed only through project financing rather than asset-based financing, there would be little value for the development of a Protocol to the Cape Town Convention, as the Cape Town Convention necessarily relies on

object-based financing to create international interests in the types of equipment it applies to. The Secretariat has made initial enquiries with the Equipment Leasing and Financing Association (ELFA) which represents over 575 financial service companies, banks and manufacturers involved in the financing and leasing of equipment, but has not yet received any substantive input on this issue.

39. Another significant issue yet to be addressed is whether complete renewable energy equipment is individually serialised by manufacturers (thus allowing for the unique identification of the equipment for its registration in the international registry). Where serialisation occurs only for parts of equipment rather than the complete piece of equipment, creation and registration of international interests in the equipment would become more complicated.

V. NEXT STEPS

40. If the Governing Council decides to recommend to the General Assembly that a Protocol to the Cape Town Convention relating to the offshore wind power generation and similar equipment be included on the Institute's Work Programme for the triennial period 2017 – 2019, the Secretariat would engage the private sector to seek further information on the challenges noted above, and ascertain whether there is industry support for the development of such an instrument. Further research would be conducted on the types of equipment that a future Protocol could cover, and the financing practices currently utilised in relation to such equipment.

41. Until such critical issues are addressed, it is not proposed that a Study Group be convened to consider the Protocol, or any draft provisions be prepared.

VI. ACTION TO BE TAKEN

42. *As consistent with paragraph 38 of the document on the Work Programme for the triennial period 2017 – 2019 (UNIDROIT 2016 – C.D. (95) 13 rev.), the Governing Council is invited to consider whether a feasibility study on another protocol to the Cape Town Convention on renewable energy equipment should be included on the Work Programme for the 2017 – 2019 triennium as a low priority project.*

Appendix A – List of HS codes for renewable energy equipment:

WIND ENERGY:

- Off-shore wind:
  - Gear box with generator (8502.31) This item concerns the gear box and generator presented together, whether or not assembled. The following components follow the same classification when presented at the same time: wind turbine blades tower
  - Wind turbine blades (8412.90)
  - Gearbox (8483.40)
  - Generator (8501)
  - Bearings (8482)
  - Tower (7308.20)
  - Electronic control equipment (8537)
  - Infield and export cables (8544.42)
  - Offshore high voltage station (8504)
  - Floating support structure (8907.90)
- On-shore wind:
  - Wind turbine blades (8412.90)
  - Gearbox (8483.40)
  - Generator (8501)
  - Bearings (8482)
  - Tower (7308.20)
  - Electronic control equipment (8537)

SOLAR ENERGY:

- Solar Thermal:
  - Parabolic reflectors (7009.91/92; 7115.90; 8306.30; 3926.90; 9001.90; 9013.80)
  - Receiver tube or heat collection element (7304.31; 7304.41; 7304.51; 7411.21; 7411.29)
  - Sun-tracking system (8479.89)
  - Support structure (7308.90)
- Solar Tower:
  - Heliostats (9005.80)
  - Central receiver (8419.89)
  - Steam turbine/generator system (8502.39)
- Solar Dish
  - Mirrors (8503.00)
  - Elevation and azimuth drives (85.01)
  - Main beam (7308.90)
  - Pedestal with dish Controller (8503.00)
  - Power Conversion Unit (Stirling engine) (8502.39)
- Fresnel-lens:
  - Fresnel reflector modules (9002.90)
  - Absorber lines (7304.31)
  - Space frame (7308.90)
  - Steam turbine/generator system (8502.39)

- Solar Heating:
  - Flat plate collector (8419.90)
  - Evacuated tube collector (8419.90)
  - Air Heaters (7322.90)
- Nanotechnology Photovoltaic:
  - PV panels (8541.40)
  - Inverter (8504.40)

HYDRO / WATER ENERGY:

- Wave power:
  - Wave power converter (8502.39)
  - Infield and export cables (8544.42)
  - Offshore high voltage station (8504)
- Tidal Steam Power
  - Tidal Steam power converter (8502.39)
  - Infield and export cables (8544.42)
  - Offshore high voltage station (8504)
- Hydraulic turbines, water wheels, and regulators therefore (HS 8410)

BIOMASS ENERGY:

FLUIDISED:

- Biomass power
  - Boiler (8416.20)
  - Steam turbine (8406.81 / .82)
  - Gas Cleaning (8421.39)
- Digestion
  - Anaerobic digester (8479.89)
  - CO^2 (8421.39)
  - Filtering (8421.39)
- Bio-Ethanol
  - Fermentation (7309.00)
  - Distillation (8419.40)
  - Purification (3802.10)
- Biodiesel
  - Crushing (8479.20)
  - Transesterification (8419.89)
  - Refining (8421.29)
  - Drying (8419.31)
  - Evacuated tube collector (8419.90)
  - Heat Storage Devices (8419.50)

GASIFICATION:

  - Gasifier (7309)
  - Gas cleaning (8421.39)
  - Gas turbine (8411.81)
  - Generator (8501) (of an output not)

  - Distillation (8419.40)
  - Purification (3802.10)

GEOTHERMAL ENERGY:

- Geothermal Power:
  - Pipes (7304)
  - Heat exchangers (7411.50)
  - Organic rankine cycle system (8502.39)
- Hot Dry Stock:
  - Drilling equipment (8430)
  - Pipes (7304)
  - Heat exchangers (8419.59)
  - Steam turbine / generator (8502.39)