



Feasibility Study Description

Making the introduction of natural gas based domestic air conditioners a market success in India

Geneva, October 2011

Noé21 is the french acronym for New Economic Orientation for the 21th century

Independent NGO specialized in solutions against climate change

Member of the European Environmental Bureau and of the Climate Action Network Europe (CAN –E)

Accredited by the United Nations Framework Convention on Climate Change (UNFCC)

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Table of Contents

1. Background, Rationale for the Study	1
2. Purpose of the Feasibility Study	2
3. Objectives and Key Questions.....	2
4. Scope: Actors, Geographical Area, Levels to be Covered.....	4
5. Composition of Noé21 Evaluation Team and Advisory Board	6
6. Timeframe, Logistics.....	7
7. Reporting	7
8. Selected Bibliography	7
9. References	8
10. Budget Proposal	9

1. Background, Rationale for the Study

The Problem

Currently 2 million domestic air-conditioners (A/Cs) are sold per year in India. The annual growth rate for A/C sales in India stands at a staggering 25%. All A/Cs sold in India run on synthetic, fluorinated gases (F-gases, namely HCFCs or HFCs). These gases are ozone friendly but a single molecule of these has a greenhouse effect ranging from 1,300 to 11,700 times more than a CO₂ molecule, giving them a very high Global Warming Potential (GWP).

The use of F-gases around the world is expanding rapidly. While the first two generations of F-gases (CFCs and HCFCs) are being eliminated under the Montreal Protocol (the United Nations ozone agreement), the third generation, HFCs, is fast replacing them. If nothing is done to reduce production of HFCs, these gases could account for 20 to 40% of all carbon equivalent emissions by 2050 mitigating current greenhouse gas emission reduction efforts. Today, A/C manufacturers in emerging economies have to decide in which direction to direct their future investments in new manufacturing lines:

- towards HFCs, then in a later phase natural gases
- or directly towards natural gases, which is much preferable for the environment

In the EU, investments made by manufacturers and end users have already shifted towards natural gases.

A solution

At the end of this year or first semester 2012, a new generation of A/Cs running on natural refrigerants (free from F-gases) is about to enter the Indian market. These A/Cs will run on HC-290 hydrocarbons (further called: HC A/Cs) and are also 10 to 20% more energy efficient, adding value for the end-consumer and relieving the country from additional energy demand.

Noé21, an independent institute founded in 2004, concentrating on evaluating and promoting solutions to reduce greenhouse gas emissions, has formerly identified the replacement of fluorinated gases as a "low hanging fruit" to achieve substantial greenhouse gas emission reductions (1).

Whether natural refrigerant appliances (A/Cs as well as refrigerators and freezer cabinets in supermarkets) have an early uptake in emerging economies relies in part on how successful the introduction of HC A/Cs will turn out to be in India in 2012. There are many obstacles to overcome for the introduction of HC A/Cs in the market to be a success, namely fear of novelty by consumers, lack of experience, security concerns, and contrarian advertisement by F gas proponents. But there are also several opportunities (eco-branding, energy efficiency, etc.) and a variety of actions that can be taken to make this introduction a clear success (see chapter 3).

If this market success is attained, an example will be set for other A/C manufacturers and importers to switch away from harmful fluorinated gases, and invest in lines manufacturing HC A/Cs. This applies not only to India but also to other countries where the A/C market is growing exponentially.

2. Purpose of the Feasibility Study

Chapter 3 outlines what actions we believe should be taken in order to help HC A/Cs become a clear industrial and market success in India. 10 such measures were outlined, to be taken by Noé21 in Geneva, while visiting relevant agencies in Paris, Brussels and Berlin or while consulting stakeholders and potential partners in India.

The purpose of this feasibility study is to determine whether and which of the 10 different actions are technically feasible and if they are relevant in reaching the goal of making India an example for the introduction of HC A/Cs in other rapidly growing economies. A set of key questions must be addressed before the main program can be launched on a large scale. Once the feasibility study is achieved and the best actions are decided upon, the main program will be able to be carried out.

According to Noé21's charter (2), we consistently rely on feedback from stakeholders and specialists we consult to help us decide how to reach our objectives. Further and additional consultations and studies will be done during the feasibility study in order to help shape the main program.

3. Objectives and Key Questions

Two sets of actions are to be tested with this feasibility study:

1. Making the first launches of HC A/Cs in India a market success.
2. Accelerating investments by manufacturers and importers in HC A/C production lines.

3.1. Making the first launches of HC A/Cs in India a market success

Noé21 defined eight actions (and associated key questions) that can be carried out for a successful uptake of HC A/Cs by consumers in India. These actions which are listed below need to be evaluated before the main program can be launched. We believe there are niches where a Noé21 program can play a useful part to ensure this success; but needs and possible difficulties and opportunities must be evaluated more thoroughly.

Through the consultation of stakeholders and experienced specialists in Europe and India, our objective with this feasibility study is to test each action separately and to test the relevance of these actions taken together:

3.1.1 Establishing a Steering Committee for HC A/C Promotion

Is there a use for such a committee to be convened? Is it practically feasible? The committee could bring together representatives of organizations interested in seeing a market success for HC A/Cs in India. The goal would be to share ideas to facilitate a market success. This group would be managed efficiently from within India.

3.1.2 Performing a consumer and dealer perceptions survey

Has a survey been conducted aimed at understanding consumer and distributor's perceptions and demands regarding new A/Cs? If not, can this be a valuable input?

3.1.3 Preparing a response strategy to negative advertising

Must negative advertising against HC A/Cs be expected (as for HC A/Cs in cars)? In this event, is a rapid response strategy giving practical actions to perform by independent third parties a useful input?

3.1.4 Establishing a helpline for HC A/Cs

Can a telephone helpline and dedicated website available for queries from suppliers, service people, and owners of HC A/Cs be useful? Should this helpline be installed and managed by the industry branch or by the Steering Committee for HC A/C Promotion?

3.1.5 Labeling of HC A/C's by the Energy Efficiency Bureau

Has the Indian Bureau of Energy Efficiency planned on evaluating energy efficiency performances of new HC A/Cs with their Power Savings labeling for consumers? According to first results with Chinese HC A/Cs, these are ~15% more energy efficient than current A/Cs. Can Noé21 be instrumental in having these tests carried out in time for HC A/Cs to have a better chance of being sold as soon as they are launched in the market? The same question applies for the upcoming rating agency Topten India.

3.1.6 "Climate friendly ✓" and "Ozone friendly ✓" labeling.

Contrary to current A/Cs, HC A/Cs are not only ozone friendly but also climate friendly. Is there a case for introducing such a label (Climate friendly) for A/Cs, either by the government agency level (BEE) or by the industry branch level?

3.1.7 Inform consumer clusters about HC A/Cs.

Equipment of HC A/Cs in new homes and buildings by developers can add a green marketing argument toward home and condominium purchasers. Can architects, developers, hotel chains, etc. gain from this new form of competitive advantage? Should product and issue placement during cluster consumer gatherings (congresses, fairs) be organized?

3.1.8 Standardization for green building.

What existing eco standards for homes and offices can include the standard equipment of HC A/Cs? Is it too early for this criterion to be added?

3.2. Accelerating investments by manufacturers in HC A/C production lines and imports of HC A/Cs

As Chinese HC A/Cs are being introduced in the Indian market (end of 2011 or 1st semester 2012), Indian and foreign manufacturers selling A/Cs in India will be contemplating this move as a challenge. Door-to-door surveys at the management level of these manufacturers is planned to ask them to position themselves and say when they intend on switching their investments to HC A/C assembly lines, by the deadline given by international agreements (2030) or earlier. Evaluation if two planned door-to-door surveys and rankings with a year between each (to measure success) are practical and if this creates an incentive to accelerate investments in HC A/Cs needs to be done. This strategy using motivations based on comparative competition is based on a previous successful campaign led by the Environmental Investigation Agency in the UK (<http://chillingfacts.org.uk/>).

3.2.1 Survey (first of 2 surveys) of A/C importers and manufacturers.

Is it a shared perception amongst our partners in India (see chapter 4 "Scope") that a sense of competition amongst manufacturers and importers of A/Cs can be emulated by using a survey to rank their intentions to switch to HC A/Cs?

Will a majority of these competitors in the A/C market care to reply to the surveys?

An Indian institute or NGO would visit the most important importers and manufacturers with the questions mentioned above.

3.2.2 Follow-up second and last survey

A year after the first survey (2013 or 2014), the same Indian institute or NGO would visit again the same importers and manufacturers with the same questions. Differences with results from the 1st survey would be studied and exposed in a ranking of eco-friendly corporations. What do stakeholders make of this plan?

4. Scope: Actors, Geographical Area, Levels to be Covered

The first stage of the feasibility study will consist of studying in more detail the introduction of HC cooling and refrigerating systems in other emerging countries to retain knowledge and lessons to be applied in India. This information gathering stage will be carried out through consultations and further building our network of stakeholders.

4.1 Potential Actors, Interviews, and Field Trips

Stakeholders need to be contacted during the feasibility study in order to gather information, eventually determine their interest, availability and possible financial needs so as to become partners during the planned implementation of the program (Noé21 is already in contact with most of the below mentioned institutions):

- Shecco, Brussels (BE)

Shecco is a private institute dedicated to bringing natural refrigerants faster to markets. 4 meetings during the last year have already been conducted between Noé21 and Schecco's management to discuss these issues. They will be asked to join the planned Steering Committee and help with their experienced advice and network.

- UNIDO, Geneva (CH)

UNIDO has already worked on the issue from the CDM side with INFRAS, their advice and contacts will be helpful in India.

- UNEP Ozone Action Program, Paris (FR)

The Ozone Action Program is an international coordination to monitor implementation of Montreal Protocol agreements with an eye on F-gas climate impacts.

- TERI, New Delhi, Mumbai (IN)

The Energy and Resources Institute (TERI) is an important Indian NGO, assessing solutions for the planet's climate future. Noé21 has had some contacts already and TERI would have the manpower and skills to cooperate on this project.

- **Shakti Sustainable Energy Foundation, New Delhi (IN)**

Shakti's mission is to catalyze innovative policy solutions that encourage energy efficiency and the development of newer energy sources. Although much smaller in size, Shakti like TERI has the skills to be a partner in this project. Here as well some contacts took place. The field trip should involve Shakti in Delhi, TERRE in Pune (see below), and TERI in Mumbai.
- **TERRE, Pune (IN)**

The Technology, Education, Research and Rehabilitation for the Environment is an institute founded by Rajendra Shende, a close advisor to Noé21 and former Head of UNEP Ozone Action Program. Noé21 would like M. Shende to be a key partner for the management of the program.
- **EMPA, Dübendorf (CH)**

To evaluate cooling performances, security and energy efficiency of HC A/Cs, EMPA experience will be very useful. Another possibility is to work with TERI and/or the Shakti Foundation for the same purposes. Both will be invited to join the Steering Committee.
- **GIZ, Bonn (DE)**

GIZ holds the closest experience to the refrigerant issue in India with projects successfully implemented for natural refrigerants in Swaziland, Namibia and China. Noé21 is already in good contact with M. Markus Wypior, a senior staff member of GIZ in Bonn.
- **Environmental Investigation Agency, London (UK)**

The EIA Chilling Facts positive campaigning with UK supermarkets has been successful and inspirational for this project, meeting EIA staff in London helped elaborate this project for India.
- **Earthcare Products, Ware (UK)**

The institute founded by Nicholas Cox, a leading expert and counsel in the technicalities of HC A/Cs will be asked to join the Steering Committee.
- **ISHRAE, Delhi (IN)**

Members of the Indian Society of Heating, Refrigerating and Air Conditioning Engineers are overwhelmingly manufacturing fluorinated gas A/Cs, but their knowledge and influence cannot be overlooked. Meetings will be arranged to know where industry stands regarding Montreal Protocol agenda for natural refrigerants phase in, particularly for the second set of objectives and questions (see chap. 3 above).
- **Bureau of Energy Efficiency (BEE), Delhi (IN)**

Energy labels on electrical appliances in India are important to determine consumer-buying decisions. The involvement of a governmental office like BEE would be a great advantage in forming a partnership with TERRE or TERI.

4.2 Geographical Area

During most of the three months the feasibility study is set to take place, Noé21 staff will be working in Geneva, with frequent short trips to Bonn, Brussels, Paris and Dübendorf. Field trips in European locations and India are planned to meet the stakeholders listed above.

5. Composition of Noé21 Evaluation Team and Advisory Board

The feasibility study will be lead out by three members of Noé21 that will compose the evaluation team:

- **Noé21 Evaluation Team:**

- Philippe de Rougemont, Noé21 President, Geneva (CH).
- Chaim Missim, Noé21 Director, Geneva (CH).
- Sven Schmitz-Leuffen, Environmental Engineer, Geneva (CH).

The feasibility study will receive experienced advice on the issue by a board of specialists ranging from a variety of organization (This board is not the Steering Committee mentioned above, which will be constituted in a second phase provided the larger project receives funding). Noé21 has been in contact with members of this planned advisory board several times regarding the issue of natural gases used in the refrigerating and cooling industry. If funding is secured for this feasibility study a formal request to join the board will be sent out to the following potential members that will compose the advisory board:

- **Advisory Board:**

- Markus WYPIOR, Project Manager, GIZ, Bonn (DE).
- Alexander COHR PACHAI, Technology Manager, Johnson Controls, Hojberg (DK).
- Fionnuala WALVARENS, Campaign Manager, Environmental Investigation Agency (EIA), London (UK).
- Janos MATE, Ozone Policy Consultant at Greenpeace International, Vancouver (CA).
- Nicholas COX, Sustainability Consultant and Managing director, Earthcare, Ware (UK).
- Brent HOARE, Executive Director Green Cooling Association, Katoomba (AUS).
- Nina BURHENE, Marketing Manager, Shecco, Brussels (BE).
- Marc CHASSEROT, Head of Government Affairs, Shecco, Brussels (BE).
- Rajendra M. SHENDE, Consultant, Former Head of Ozone Action Program, UNEP, Paris (FR).
- Felix DALANG, Chemist, Scientific Advisor, Noé21, Geneva (CH).
- Jérôme STROBEL, Physicist, Scientific Advisor, Noé21, Geneva (CH).
- Stefan KESSLER, INFRAS, Zürich (CH).
- Florian KASSER, INFRAS, Zürich (CH).
- Daniel COLBOURNE, Independent Consultant, Re-PHRIDGE, Stratford-upon-Avon (UK).

6. Timeframe, Logistics

The feasibility study will last three months, starting as soon as funding is secured.

The report will be delivered a month later.

Logistical needs are all accounted for in the budget described in chapter 10, including administrative costs.

7. Reporting

The feasibility study will produce a detailed Feedback Report with lessons learned, interview scripts, and chosen partners for implementation of a full Indian main program (provided additional funding is secured).

8. Selected Bibliography

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www.encyclopedia-from-germany.info

9. References

(1) In April 2010, Noé21 submitted a proposal for a new methodology to the UN Framework Convention on Climate Change (UNFCCC). The proposal, finally accepted by UNFCCC as well as by the EU commission, halted emissions reduction certificates to be delivered for excess F-gas burning in factories. The certificates were widely judged as being fake credits.

(2) <http://www.noé21.org/site/index.php/en/about-us/charter>

10. Budget Proposal

FEASIBILITY STUDY BUDGET	CHF (excl. VAT)
1. HUMAN RESOURCES	50,000
450 hours between 3 Noé21 staff (100.-/h)	45,000
Indian NGO staff expenses during travels	5,000
2. TRAVEL COSTS AND REPRESENTATION EXPENSES	9,600
Geneva-Bombay roundtrip, for 3 Noé21 staff	3,600
Domestic flights or train to Pune, Delhi and Bangalore	1,000
Expenses for 3 Noé21 staff during 2 weeks in India (accommodation and meals)	3,000
Regional travel: Geneva - Paris/Brussels/Berlin	3,000
3. ADMINISTRATIVE COSTS & UNEXPECTED EXPENSES	4'000
Overhead, telephones, mailings	3'000
4. REPORT EDITING	1,000
Graphic design and reproduction	1,000
PROJECT TOTAL	64,600

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